

**Mental Health Challenges and Resilience in Lesbian, Gay, and Bisexual
Young Adults: Biological and Psychological Internalization of Minority Stress and
Victimization.**

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ABSTRACT

Mental Health Challenges and Resilience in Lesbian, Gay, and Bisexual Young Adults: Biological and Psychological Internalization of Minority Stress and Victimization.

Michael Benibgui, Ph.D.

Concordia University, 2010

This study was a novel exploration of psycho-social and neuroendocrine factors that may contribute to mental health in LGB youth and young adults. Research suggests that, compared to their heterosexual peers, LGB youth and young adults report alarmingly elevated rates of depression, anxiety, suicidal ideation and attempts, and lower self-esteem in concert with a much higher incidence of victimization from family and peer-groups. Homophobic societal attitudes compounded with discrimination, marginalization, stigma, and victimization experienced by LGB individuals are thought to contribute to the development of internalized homonegativity (IH) and psychological distress. Research also suggests that victimization and social stressors can dysregulate cortisol activity, leading to increased risk for mood disorders. The main goal of the present study was to investigate the interplay of bio-psycho-social factors that are thought to contribute to positive and negative indices of mental health in a community sample of 63 LGB young adults in Montreal, Canada. Dysregulated diurnal cortisol activity and internalized homonegativity were postulated to function either as mediators or as moderators of the links between parental support, social support and LGB-related stress on the one hand, and depression, anxiety, suicidality and self esteem on the other.

LGB young adults experiencing more LGB-related stress had more depressive symptoms and lower self-esteem. Interaction effects with parental and social support were also found. IH and cortisol were both positively correlated with LGB-related stress. IH and cortisol slope jointly predicted depression, but each uniquely predicted the other measures of mental health. LGB young adults experiencing varying levels of IH benefited from different social relationships. Cortisol slope also moderated the relations between support, victimization and mental health. These results are particularly striking given the overall high-level of mental-health of this particular sample.

The findings of this study were in accord with diathesis-stress models of mental health. Implications for understanding the bio-psycho-social basis of mental health and promoting the well-being of LGB young adults were considered, as were limitations imposed by the sample and methodology.

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Introduction

In the western world, the last century has seen paradigm-shifting changes in human rights legislation and increased societal pressure for establishing equal rights and respect between genders and amongst ethnic groups. In North America, prejudice and discrimination against most minority groups is no longer supported by the state, with one notable exception. In spite of recent legislation in some provinces and states, sexual orientation remains a minority identity that is systematically discriminated against, ignored, victimized, and ridiculed, both in the private and public spheres.

From a psychological health perspective, this societal homophobia is not without consequences. It is increasingly recognized that sexual minority individuals are at elevated risk for a variety of mental health problems. Depression, anxiety, and substance abuse have all been documented to be more common in this group than in the general population. Compared with their heterosexual peers, LGB youth and young adults also report alarmingly elevated rates of suicidal ideation and attempts, often subsequent to victimization and bullying from their peers.

Decades of research document that mental health problems are not inherent in this population. Rather, it is the homophobic societal attitudes compounded with discrimination, marginalization, stigma, and victimization experienced by LGB individuals that are thought to contribute to the development of psychological distress. This can be understood as an example in which stress precipitates episodes of psychiatric disorders.

Within this sexual minority, the stage of late adolescence / early adulthood may be a period of particular vulnerability perhaps because this is such an important developmental

period for identity development and consolidation. However, relatively little is known about the processes and mechanisms by which the stress of discrimination and victimization undermines mental health in LGB youth. In particular there has been very little research into the physiological factors that affect mental health in this population.

By extension, relatively little is known about why the majority of LGB individuals appear to be resilient and ultimately recover from the damaging impact of a homophobic environment. Family and social groups are important parts of an individual's stress and support system. In ethnic minority populations, for example, it has been shown that familial and peer social support may, in some cases, provide a buffer against the effects of racism on mental health (Jasinskaja et al., 2006)). The extent to which these kinds of support structures are present or protective in the lives of LGB individuals, has received only a modest amount of attention in the research literature.

Physiological factors also exert tremendous influence on the development and expression of mental health, in the context of stress. Of these, perhaps none has received as much wide-spread attention as the complex interplay of endocrine hormones (e.g. cortisol) and neurotransmitter systems (e.g., serotonin) upon neuronal structures and networks responsible for emotion regulation and cognition. Of all endocrine axes, the hypothalamic-pituitary-adrenal axis (HPA) has been the most widely evaluated and has been shown to play a pivotal role in responses to external and internal stimuli including psychological stressors. Correspondingly, abnormalities in HPA function, as measured by dysregulated cortisol, have been described in people experiencing psychological disorders.

The present study was conducted to explore the notion that discrimination and homophobia in an individual's environment is experienced as a stressor that affects LGB

young adults' mental health, as measured by symptoms of depression, anxiety, suicidality and self-esteem. It also explored the notion that LGB youths' internalization of societal LGB-discrimination and prejudice serves as a mechanism by which LGB-stress affects mental health. In a parallel fashion, the link between LGB-stress and cortisol functioning was explored, with the intent of showing an additional mechanism by which societal stress affects mental health. Evidence that individual differences in cortisol functioning may be seen as a biological diathesis which offers vulnerability or resilience to some LGB youth in the face of LGB stress was examined. In addition, the extent to which individual differences in social and familial support buffers against the effects of stress was investigated. Figure 1 illustrates a conceptual representation of some of the factors thought to be involved in the mental health of LGB individuals, and which will be discussed in this study.

The following introduction first briefly reviews some of the literature pertaining to the developmental stage of young adulthood and sexual orientation consolidation. Issues in LGB mental health, risk and protective factors, minority stress, and internalized homophobia are then discussed before exploring the concept of stress, its endocrine hallmark, cortisol, and their link to mental health. Finally several hypotheses are presented in the attempt of elucidating potential interplays of bio-psycho-social factors related to mental health in LGB young adults.

Emerging Adulthood

The transition to adulthood, or *emerging* adulthood, generally identified as the ages of 18 to 25, is marked by several developmental milestones. (Arnett, 2005; Berry 2004; Schulenberg et al., 2004) Compared to childhood and adolescence, empirical attention given to this period is relatively scarce. This may reflect an assumption that the events and experiences

Figure 1

Conceptual Representation of Factors Related to Mental Health in LGB Individuals



that constitute the transition to adulthood are relatively inconsequential to the course of mental health (Schulenberg 2004). And yet, like all major life transitions, emerging adulthood is marked by a series of changes involving, among others, perspective taking, emotional regulation, sexual expression, independence, affiliation, and achievement. Neurobiological changes have also been shown to occur during this transition, including synaptic pruning of the prefrontal cortex, developmental changes in prefrontal and limbic regions, and continued myelination of intracortical and mesolimbic neurotransmitter systems (Schulenberg, 2004). Complex interactions between social-environmental factors and neurobiological mechanisms during this period set the stage for baseline levels of psychological functioning in adulthood, as the brain is thought to become less plastic over time. In essence, biologically, emerging adulthood is a period where the brain “settles into itself”. Like all other developmental stages, the transition to adulthood is embedded in a socio-cultural context, and therefore, may vary in occurrence, context and meaning by gender, socioeconomic background, culture, and historical period. Most developmental theorists have not focused on how emerging adulthood and identity development may differ across diverse populations, or within minority groups, especially sexual minorities. This is an area which requires further attention especially given the alarming link between LGB-identity conflict and suicide in this age bracket.

Sexual Identity Development

One of the central tasks of *emerging* adulthood is the establishment of a sexual self. Sexual identity is the enduring sense of oneself as a sexual being which fits a culturally created category and is a result of one’s sexual fantasies, attractions, and behaviours (Savin-Williams, 1995). For gay, lesbian and bisexual (LGB) individuals, emerging adulthood is often a period

of intense questioning and anxiety as they come to terms with the fact that their sexual attractions do not conform to society's heterosexual norms, and that societal biases devalue same-gender erotic and affectionate feelings. This period is also often marked by the important stage of "coming-out", or revealing one's LGB identity to others, and socializing with other self-identified LGB individuals.

The development of a gay, lesbian or bisexual identity can be a stressful and tumultuous process for some individuals. It can be argued that, unlike members of racial or ethnic minority groups, most LGB individuals are not raised in families or communities that share their minority status, or that validate, support or, much less, celebrate their minority status (Appleby, 2001). More often than not, LGB youth face negative reactions from their environment and are continually exposed to heterosexist biases during critical developmental periods. Negotiating these conflicts between identity and societal norms is a key developmental task for LGB adolescents and LGB young adults (Bohan, 1996).

Homosexual Orientation Development

Sexual identity development has received more attention of late and several theorists have proposed stage-based models to better understand the unique milestones in LGB identity formation. Cass (1979), Plummer (1981), Troiden (1989), Coleman (1989) and Rotheram-Borus (1995) (cited in Bohan, 1996) have proposed similar models of LGB sexual identity development. One of the more detailed stage perspectives has been proposed by Cass (1979, 1984, 1990, 1996; cited in Bohan, 1996) and was informed by the impact of stigma on development. Cass posed a six-stage model, each stage associated with multiple pathways and conflicts. In this model, advancement from one stage to the next is dependent upon successful

resolution of the stage-based conflicts. The first stage is marked by *identity commitment/confusion*, in which the individual realizes that his/her own thoughts and actions are discordant with the larger majority; this leads either to positive self-image or to a feeling that this discordance is unacceptable and undesirable. Regardless of the outcome of stage one, prospective LGB individuals recognize that they are part of an ostracized minority. The second stage, *identity comparison*, presents multiple pathways: one may choose to pursue this minority identity, reject the identity and falsely proclaim a heterosexual identity, or fail to resolve the dilemma and maintain a negative self-concept, possibly leading to depression and suicidal ideation. The third stage, *identity tolerance*, in which the individual becomes more certain of his/her LGB identity, also posits several pathways in which one may attempt to reconcile personal needs with the demands of the larger society, with varying degrees of commitment to one's own particular identity. In this stage, LGB identity may be tolerated rather than celebrated, and if early experiences regarding the LGB community are negative, they may arouse internalized homophobia and self-devaluation. On the other hand, good experiences with other LGBs and incorporation into a LGB community serve to support movement toward an affirmative sense of oneself as gay, bisexual or lesbian. Stage four, *identity evaluation or acceptance*, reflects the process by which tolerance becomes acceptance and recognition of oneself as lesbian, gay or bisexual with enhanced self-valuation and a sense of normalcy and belonging. Stage five, *identity pride*, results from continued disclosure of one's LGB identity, increasing contact with other minority members and adopting an *us vs. them* attitude valuing homosexuality and possibly devaluing heterosexuality. The increased disclosure that accompanies this sense of pride not only brings one's private and public identities in line, but also opens possibilities for increased confrontations with overt

homonegativism, discrimination and hostility. If response to this disclosure is a highly negative one, one may suppress the LGB identity once again. If the response is predominantly positive, one may eventually move on to stage six, *identity synthesis*, in which feelings of anger and frustration are replaced by enhanced personal acceptance and recognition of the LGB identity, together with the integration of self esteem that makes it possible to also value those who are different from oneself. In stage six, LGB identity becomes just one aspect of identity, rather than the sole preoccupation which allows for greater integrity in one's sense of self.

Empirical testing of the models of identity development revealed four central points, summarized by Garnets and Kimmel (1993). First, initial awareness of same gender sexual desires initiates a developmental transition in which individuals report feeling different from the majority (Cass's identity confusion). Second, in order to form a positive LGB identity, one must assess, confront and reject the negative identity promulgated by heterosexist societies and transform that identity into a positive self concept. LGB individuals may use various strategies, as described by Troiden (1989), to evade the stigma associated with homosexuality. Exploration of the LGB culture followed by disclosure (coming out) and self-acceptance form the last stages of these proposed models. This process was previously described as occurring over several years, culminating in the achievement of a positive LGB identity for women, on average, at 24-29 years of age and for men between the ages of 22-26 (Garnets & Kimell, 1993). Stage based depictions such as the one described above cannot be universally applied, and do not account for the fluid nature of sexual orientation. Of course, not all LGB individuals pass through all these stages or in that particular order. Research suggests that self awareness and disclosure among youth in recent years occurs far earlier than in the cohorts

represented in these models. It has been argued that in recent years, generational and cohort effects due to changing societal norms have influenced LGB individuals to explore and disclose their sexual orientation at a younger age (Garnets & Kimmel, 2003). Therefore, self-identified LGB youth of today must deal with the effects of stigma and difference at an earlier developmental stage than theorized by the previous models. This may make them more psychologically susceptible to the negative impact of stigmatization, victimization and discrimination based on their sexual identity. D'Augelli (2002) showed that the earlier LGB developmental milestones were reached, the more victimization youths reported.

Another factor that further complicates identity development for LGB individuals is the stigma and fear associated with HIV/AIDS. Self-acceptance of one's LGB (more specifically for gay and bisexual men) identity is made more difficult by the realization that this identity is closely connected to HIV/AIDS. Thus, LGB individuals also struggle with the fear that expression of homosexual feelings may put one at lethal risk, and the fear of additional stigma attached HIV/AIDS. As such, the process of coming to terms with one's LGB identity, and formation of a positive self concept, may be delayed (Bohan, 1996).

The stage models discussed thus far all account for the so-called "coming out" process, which has been identified as a stressor that is unique to LGB individuals, and highly salient. Unlike most other minority groups, many LGB individuals, especially those in mid-level stages of identity development, must surreptitiously consider whether to hide or disclose their sexual orientation to others, and live in doubt, vigilance and fear as to the consequences of such disclosure. This context and process are considered highly stressful (D'Augelli, 2002; Floyd & Stein, 2002).

Common to all models of LGB identity development is the role of stigma management. Individual variations in ability to cope with stigma underlie LGB identity struggles. Some individuals, particularly those who are vulnerable, pay a severe psychological price for this struggle. However, what is more remarkable is the resilience of most LGB individuals, the majority of whom emerge from these stages with a positive sense of self. From this perspective, the struggle to achieve a positive sense of one's LGB identity in the face of stigma and prejudice is not necessarily a source of inevitable pathology but a stepping stone for healthy development.

Minority Stress in LGB

Stress can be described as any condition having the potential to arouse the adaptive machinery of the individual (Pearlin, 1999) This definition also includes the popular understanding of stress as physical, mental, or emotional pressure, strain or tension. In the psychological literature, stressors are defined as events and conditions (e.g., death of a relative; multiple tasks and responsibilities, experience of victimization) that require the individual to adapt to the situation, or to respond so as to reduce the stress load.

The concept of social stress extends stress theory by suggesting that, in addition to personal events, conditions in the social environment are sources of stress that may have detrimental mental and physical health effects. Social stress is thus expected to have a strong impact in the lives of people belonging to stigmatized social categories, including categories related to socioeconomic status, gender, race/ethnicity and sexual orientation. Accordingly, prejudice and discrimination related to racism, sexism or homophobia – much like the changes precipitated by personal life events that are common to all people – can apply psycho-social

pressure that require adaptation and are therefore conceptualized as stressful (Allison, 1998; Barnett, Biener & Baruch, 1987; Clark et al., 1999; Meyer, 1995, 2003; Mirowsky & Ross, 1989; Pearlin, 1999b). In its most general form, recent stress discourse has been concerned with external events or conditions that are taxing to the individual and exceed their capacity to endure, therefore having potential to induce mental or somatic illness (Dohrenwend, 2000).

One way of studying the experience of LGB young adults is through the concept of *minority stress*. Minority stress, originally theorized, has been defined as a state resulting from "...culturally sanctioned, categorically ascribed inferior status, social prejudice and discrimination, the impact of these environmental forces on psychological well-being, and consequent readjustment or adaptation" (Brooks, 1981, p. 107). It is the excess stress to which individuals from stigmatized social categories are exposed as a result of their social status, as well as the stress engendered when minority status conflicts with one's other roles.. Several relevant theories have discussed the adverse effects of social conditions, such as prejudices and stigma, on the lives of affected individuals (e.g., Allport, 1954; Crocker, Major, and Steele, 1998; Goffman, 1963; Link and Phelan, 2001). Hans Selye (1982) described a sense of harmony with one's environment as the basis of healthy living; deprivation of such a sense of harmony may be considered the source of minority stress. When the individual is a member of a stigmatized minority group, the disharmony between the individual and the dominant culture can be intolerable and result in high levels of stress.

According to Meyer (2003), minority stress is additive, chronic, and socially based. It is additive to general stressors that are experienced by all people, and therefore, stigmatized people are required to make an adaptation effort above that required of others who are not similarly stigmatized. Minority stress is chronic in as far as it is related to stable underlying

social and cultural structures , and stems from social processes, institutions and structures beyond the individual rather than events or conditions that characterize general stressors or biological, genetic or other non-social characteristics of the person or group.

Meyer (1995, 2003) adapted this concept of *minority stress* to offer a framework for understanding the particular challenges faced by LGB individuals, and the increased prevalence of mental health problems in this population. He suggested four processes of minority stress relevant to LGB individuals (Meyer 1995, Meyer & Dean, 1998). From distal to proximal they are a) external objective stressful events and conditions, b) expectations of such events and the vigilance this expectation requires, c) the internalization of negative societal attitudes, and d) concealment of one's sexual orientation.

Like members of other stigmatized minority groups, LGB individuals must deal with prejudice and discrimination that result from not conforming to majority norms. As such, LGB individuals experience chronic stress due to their own status as a sexual minority. Stigmatization, or negative regard from others, can lead to negative self-regard (Rosenberg, 1979) and adverse mental health outcomes (Crocker and Major, 1989). Allport (1954) described "traits due to victimization" as the defensive reaction of stigmatized individuals. These may be caused by internal mechanisms, including self-hate and in-group aggression, and/or external mechanisms, including shyness and avoidance, obsessive concern with the stigmatizing characteristic, and rebellion.

Internalized Homonegativity

In LGB individuals, one type of internal defensive reaction is known as internalized homophobia or homonegativity. The term *homophobia* literally describes a dread or fear of

homosexuality and does not reflect the actual clinical presentation of this reaction. The preferred term, *internalized homonegativity* (IH) refers to a LGB person's direction of negative social attitudes about homosexuality toward oneself, leading to a devaluation of the self, internal conflicts, and poor self regard (Shidlo, 1994). IH is believed to be a normative consequence of being exposed to the majority culture's heterosexist standards during childhood. Heterosexual interests, behavior and relationships are, more often than not, the only models of adult sexual orientation to which most children are exposed, and families and society portray heterosexuality either as the only, or the most normal and acceptable, expression of sexuality. Perceiving that their own growing sexual awareness does not conform to these models and norms, many LGB individuals adopt negative attitudes towards their homosexuality early in their developmental histories (Isay, 1990). Societal negative attitudes toward homosexuality are incorporated into self image, creating various psychological distortions and reactions (Gonsiorek, 1996, p.115).

It has also been argued that IH in lesbians and bisexual women is compounded by the negative effects of female gender-role socialization and the experience of sexism in women's lives (Szymanski & Chung, 2003). IH is also compounded when multiple minority identities, such as ethnicity, and socio-economic status, intersect with sexual identity (Rosario et al., 1996; Harper, Jernewall & Zea, 2004). IH has been linked to many negative mental and physical health outcomes, including, but not limited to, depression (Igartua et al., 2003; Nicholson & Long, 1990; Shidlo, 1994), anxiety, (Igartua et al., 2003), suicide (Igartua et al., 2003), low self esteem (Szymanski et al., 2009), substance abuse (Amadio, 2006), HIV-risk behavior (Ross et al., 2006), adult attachment problems (Sherry, 2007), and somatic symptoms (Williamson, 2000).

The effects of IH are uniquely devastating because most developing LGB individuals are different not only from societal norms, but also from their own family and the majority of their immediate community members. In contrast, within ethnic, racial and religious minority groups, minority status is related not only to stigma and discrimination, but also to such protective resources as group solidarity, cultural pride, and cohesiveness, which shield minority members from the adverse mental health effects of social stress (Crocker and Major, 1989; Kessler et al., 1985). This counteraction is termed *minority coping*. Minority coping may work in a variety of ways: by providing opportunities for social support, pride and empowerment; by affirming and validating minority persons' culture and values; and by allowing reappraisal and devaluation of the stigmatizing values of the dominant culture (Meyer, 1995, p. 40). Because LGB individuals are almost universally raised within families with heterosexual parents, they are unlikely to be regularly exposed to positive, affirming adult LGB models, or to receive stigma-buffering messages of support concerning the validity of homosexual orientations. Consequently, they are confronted with the additional challenge of not only being stigmatized by society at large but also the prospect of being an outcast in their own homes. Several studies have found that up to 35% of homeless teens identify as LGB (Truong, 2004). Even if parents are themselves accepting of homosexuality, they are not likely to know early-on that one or more of their children is gay or lesbian, and are therefore unlikely to provide affirming, targeted socialization efforts to protect their child's self-esteem and self-acceptance. Studies have shown that self-esteem in LGB individuals is associated with having a positive relationship with both mother and father (Savin-Williams, 1989). Because of the strength of early cultural socialization and continued exposure to anti-

homosexual attitudes, IH can remain an important factor in the LGB person's psychological adjustment throughout life (Nungesser, 1983).

LGB-Related Stress

Despite increasing acceptance and movement for more civil rights for LGB persons in many Western nations in recent decades, homosexuality is still stigmatized and devalued with respect to heterosexuality in most cultures. Violence and hate crimes against LGB individuals are still common in North America. Several studies have shown that at least half of LGB individuals have been victims of antigay violence or harassment in their lifetimes (DiPlacido, 1998). Verbal abuse and peer harassment towards LGB youth and young adults are prevalent in high school and college campuses, and carry serious impacts. Population based studies such as the National Youth Behavior Risk Survey have concluded that LGB-identified youth are at increased risk of being threatened and assaulted, are disproportionately likely to have been physically abused at home and to be fearful for their safety at school to the point of deliberately skipping school days, and are more likely to display suicidal thoughts or behaviours (Goodenow, 2003). More recent large scale youth behaviour surveys in the United States have shown that students who said they had been harassed because someone thought they were LGB were 4 times as likely as their heterosexual peers to have attempted suicide. (Goodenow, Massachusetts Department of Education, 2003). In LGB adults, various indices of LGB-related stress, such as negative familial reactions, violence, and discrimination in the work-place, have been found to be correlated with depressive symptoms (Lewis et al., 2001).

As minority group members, LGB individuals are exposed to both acute and chronic negative life events related to stigmatization and discrimination by a society in which

homosexuality is negatively sanctioned. Rosario and colleagues (1996, 2002) explored the impact of the unique and multidimensional set of stressors experienced by LGB individuals, which they termed LGB-related stress. Operationally, LGB-related stress is defined as the experience of verbal abuse, rejection, harassment, victimization, interpersonal conflicts, and violence toward individuals who are, or are perceived to be, LGB. Surveys have shown that 30% - 80% of LGB youth experience verbal abuse from family members, and one of every four has encountered physical abuse from peers at school. (D'Augelli 1998). In one study, 80% reported verbal insults, 44% were threatened with violence, 31% were chased or followed, and 17% reported being physically assaulted because of their sexual orientation (Lock & Kleis, 1998). Rosario and colleagues (2002) found that LGB-related stress correlated with anxiety symptoms and IH in LGB adolescents. Lewis and colleagues (2003) also found a moderate correlation between LGB-related stress and IH and depressive symptoms. As such, one cannot consider the psychological well-being of LGB individuals without addressing the societal stigmatization and unique stressors to which they have been subjected. It is also very important to acknowledge the wide diversity across all levels of the LGB spectrum. Stressors may be very different for men versus women and for homosexual versus bisexual individuals. For example, Lewis et al. (2001) showed that gay and bisexual men reported more stressors related to violence and harassment, while lesbian and bisexual women reported more family-based stressors.

It is thought that the experience of LGB-related stressors might both exacerbate, and result from, LGB individuals' level of IH. IH may contribute to the fear that one's sexual identity could be discovered, thereby impacting interpersonal behavior and exposing one to greater victimization. This chronic aspect of internal LGB-related stress is particularly

prevalent among individuals who are just becoming aware of their LGB identity, as well as in those who have just begun the process of publicly disclosing their sexual orientation (*coming out*). D'Augelli (1992) showed that 97% of LGB university students felt at least somewhat uncomfortable disclosing their sexual identity to others. Many, if not most, LGB individuals continue to work through their negative attitudes and discomfort with homosexuality throughout most their lives, as evidenced by the findings that LGB adults are also affected by these internal stressors (Downey & Friedman, 1995; Meyer, 1995).

Fear of discovery of one's homosexuality may lead to chronically heightened vigilance, further taxing the internal coping resources of LGB individuals. The concept of vigilance may help to explain the stressful effects of stigma. A high level of perceived stigma would lead minority group members to maintain a high degree of vigilance – expectations of rejection, discrimination, and violence – with regard to the minority components of their identity in interactions with dominant group members (Meyer, 1995). This vigilance is chronically present and stressful in that it requires considerable energy in adaptation (Allport, 1954). Thus, not only is fear of exposure personally distressing, but the arousal, wary anticipation and constant vigilance against potential aggressors may erode LGB individuals' psychological and physiological resources and abilities to cope with both LGB-related and general life stressors when they do occur.

Psychological Distress in LGB Individuals

It has been argued that LGB-related stress explains the higher rates of psychological distress among LGB individuals (Diplacido, 1998; Garnets & D'Augelli, 1994; Rosario et al., 2002). LGB individuals are at increased risk for developing several mental health problems

compared to their heterosexual counterparts (Cochran & Mays, 2005; Cochran, 2001; Gillman et al., 2001; Herrel et al., 1999; Sandfort et al., 2001; for an extensive review, see Julien & Chartrand, 2003). Community based surveys have revealed higher incidences of depression, anxiety problems and substance abuse in LGB adults (Lock, 1999; Matthews et al., 2002; Safren & Heimberg, 1999). Using data from a large, nationally representative survey of adults, Cochran and colleagues (2003) examined the associations between sexual orientation, gender, psychological distress and mental health service use. Gay and bisexual men evidenced higher twelve-month prevalence rates of depression (31%), panic attacks (17.9%) and psychological distress (33.1%) than heterosexual men (10.2%; 3.8%; and 12.5%, respectively). Lesbian and bisexual women evidenced higher rates of generalized anxiety disorder (14.7%) than heterosexual women (3.8%). A number of studies have also shown that LGB adults, and especially gay men, are up to 17 times more likely than heterosexual adults to have attempted suicide (Bagley & Tremblay, 1997; Cochran & Mays, 2000; Fergusson et al., 1999; Remafedi et al., 1998). The consistency of these investigations underscores the magnitude of the ongoing challenges to mental well-being currently faced by LGB adults in Western societies.

These challenges are not only faced by LGB adults, however. The roots of mental health and psychopathology are likely to be found in earlier developmental experiences. Recently, increased empirical focus has been given to the incidence of psychological distress in LGB youth. LGB adolescents in community surveys report elevated levels of suicidal thoughts, and even of suicide attempts, with prevalence rates ranging from 20% to 52% (Suicide Prevention Resource Center, 2008), compared to 4-8% of youth in the general population (Beautrais, 2003) between 2.0 and 6.5 times the rates of heterosexual youths (Bontempo & D'Augelli, 2002; Consolacion, Russell, & Sue, 2004). LGB youth are at

increased risk for a range of other physical and mental health problems, including feelings of hopelessness and depression (D'Augelli, 2002; D'Augelli & Hershberger, 1993; Fergusson et al., 1999; Lock & Steiner, 1999; Saewyc et al., 1998; Safren & Heimberg, 1999).

Risk and Protective Factors for LGB Mental Health

An individual's interpersonal relationships can confer either risk for, or protection against, the eventual development of mental health problems. General population research has shown that social support and coping are directly related to adjustment and may buffer the negative effects of stress (Lazarus & Folkman, 1984). Although there is considerable overlap in the social support needs of LGB and heterosexual young adults, sexual minority youths also face challenges related to coping with sexual orientation stigma, as well as vigilance of future expressions homophobic prejudice and discrimination (D'Augelli, Pilkington, & Hershberger, 2002; Williams et al., 2005).

As reviewed above, LGB stress and hostile interpersonal interactions regarding one's sexual orientation are risk factors. Alternatively, positive and supportive relationships found in family, peer and school contexts have been identified as central protective factors in the lives of adolescents and young adults (Sheets & Mohr, 2009).

Anhalt and Morris (2003) characterized acceptance from others as a core protective factor in the lives of LGB youths. Elizur and Ziv (2001) found that perceived sexuality acceptance from family members predicted well-being, even after accounting for general support from family. Degree of perceived acceptance may have unique developmental consequences for sexual identity formation and tasks of stigma management, including one's ability to develop a positive identity as an LGB person.

Examinations of the factors associated with mental health have shown that the differences in depression and suicidality in LGB and heterosexual youths are largely attributable to such protective psychosocial variables as social support, and coping skills, and such risk factors as discrimination, victimization, and life stress (Safren & Heimberg, 1999). Many of the stressors that LGB youth face can be mitigated by an adequate support network. The perceived availability of social support has been found to contribute to psychological well-being and to moderate the effects of stress (Cohen and Wills, 1985; Levy 1983) in both heterosexual and LGB individuals alike (Hershberger & D'Augelli 1995; Wayment and Peplau, 1995). Likewise, parent-child relationship can either serve to exacerbate or alleviate distress (Goldfried & Goldfried, 2001). D'Augelli (1995) showed that family support was associated with LGB youths' greater self acceptance, which, in turn, was associated with fewer mental health difficulties. Floyd et al. (1999) found that accepting parental attitudes were predictive of more positive well-being and self-esteem. In contrast, the severity of the effects of parental rejection is evidenced by the disproportionate amount of LGB who account for 40%-60% of all homeless youth (Dame, 2004). Peer and social support may play an equally important role in well-being in LGB. Savin-Williams (1998) found that peer support was the most important factor in enabling LGB youth to develop a positive sexual identity.

Goldfried and Goldfried (2001) noted that youths who are rejected by parents may be especially reliant on peers for support and motivated to develop a "family of choice" as a substitute for their family of origin. LGB youths actively seek support from individuals who are not biological family members after parental rejection (Nesmith, Burton, & Cosgrove, 1999). Fear of parental rejection prevents some LGB youths from disclosing their sexual orientation to family members. The lack of disclosure, in turn, leads these youths to become

especially reliant on peers for general and sexuality-specific support (Munoz-Plaza et al., 2002). In one of the few studies to differentiate support from heterosexual and LGB peers, Munoz-Plaza et al. (2002) found that both types of peers provided emotional support but that anticipated discomfort often led individuals to avoid discussion of sexuality-related topics with heterosexual friends. Additionally, youths were most likely to report receiving affirmation and informational support from their LGB peers.

LGB youth recognize that their developing sexual identities do not conform to those of their families, most peers, and the majority culture surrounding them, and that same-sex attractions and sexual activities are devalued, or even condemned outright. Thus, many LGB youth fear that their sexual orientation will be discovered by others. This may reduce the likelihood that they will access protective social support from peers and family (D'Augelli & Hersherberger, 1993; Graber & Archibald, 2001), and increase their use of maladaptive coping techniques, leaving them more vulnerable to the adverse effects of stress.

Definitions of Stress

Before reviewing some of the literature on the link between stress and mental health it is necessary to further define the concept of stress and stressors. It is evident, however, that a generally agreed upon definition of the term *stress* is not apparent in the literature. Instead, most disciplines define the term in their own idiosyncratic manner. The concept of stress was originally taken from the dynamics of physics to describe the relation between stress and strain in an elastic body. Stated more simply, in mechanical terms, stress refers to the changes that take place on a physical body when forces are applied to one or more areas (Duncan & Starling, 1959, as cited in Levine, 2005).

Our current interest in the psychology of stress can largely be attributed to the early works of Hans Selye. Hans Selye, an endocrinologist, defined stress as the non-specific response of the body to any demand for change (Selye, 1936, as cited in Levine 2005). Selye observed in several experiments that laboratory animals subjected to acute physical and emotional stimuli (blaring light, deafening noise, extremes of heat or cold, perpetual frustration) all exhibited the same pathophysiological changes such as stomach ulcerations, shrinkage of lymphoid tissue and enlargement of the adrenals. He also showed that chronic stress could cause these animals to develop diseases similar to those seen in humans, such as heart attacks, stroke, kidney disease and rheumatoid arthritis. In this context, stress is defined in terms of the response; the adaptations that an organism had to undergo in the efforts of re-establishing homeostasis; and the deleterious effects that ensued as a consequence of this effort to adapt to external demands. Selye later coined the term *stressor*, to distinguish the objective stimulus from the subjective response. Until then, stress was thought to be equivalent to distress and it was defined as a physical, mental, or emotional strain or tension or "a condition or feeling experienced when a person perceives that demands exceed the personal and social resources the individual is able to mobilize." (Lazarus 1966, as cited in Levine, 2005). However, Selye recognized that stressors are not always experienced as negative, and that stressors can exert wear and tear on the body and the brain regardless of whether they are physical or psychological. He described three types of stressors that would exert demands on an individual: a) *Distressors*, that are experienced as negative, such as trauma, fatigue, interpersonal conflict; b) *Eustressors*, that are initially experienced as positive, such as arousal, excitement, play, significant desirable life changes; and c) *Neutrals*, which have no inherent valence but can be perceived and experience as either positive or negative depending on the

cognitive interpretations that an individual ascribes to the stressor, such as a roller-coaster ride, meeting new people, or exercise.

It was thought that all stressors result in non-specific responses related to the body's mobilization of resources to respond to a demand. Thus a wide variety of stimuli (stressors) resulted in a similar set of responses and, eventually, continued exposure to stress would result to illness. Selye defined General Adaptation Syndrome (GAS), as the physiological mechanism responsible for raising the body's resistance to damage. The GAS consisted of a three-stage reaction to stress, an alarm reaction, a stage of resistance, and a final stage of exhaustion. The alarm reaction includes components of the so-called *fight or flight* response, such as, increased autonomic nervous system arousal, resulting in, among others, changes in blood pressure, heart-rate, and adrenal hormone secretions. In the GAS model, optimal functioning requires a certain amount of stress over an optimal amount of time, but anything beyond that leads to fatigue and exhaustion as the body works to maintain balance against the strain of stress (Levine, 2005)

These definitions of stress are all dependent on the response that a stressor elicits. However, stress need not be defined by subjective response. A wide range of physical and psychological stimuli can elicit the brain to respond at a neuronal level, which may or may not provoke a classical stress response (Steckler, 2005). A stressor can be any intrusion into the external or internal environment (e.g. a social encounter, noise, infection) or withdrawal from the environment (e.g., social isolation, separation from loved one, starvation). A stressor can be a singular brief occurrence, or a long extended situation. The simple anticipation of a disruptive stimulus is, in itself, a stressor, as well (Rohrmann et al., 1999). Stressors can elicit

the full range of emotions, from excitement, anticipation and delight, to anxiety, anger and hopelessness.

The cognitive appraisal of a situation will determine the strategy chosen by an individual to cope with a stressor. It is clear that there are individual differences in stress coping. These differences seem to be based, in part, on genetic factors which interact with developmental and situational influences (Steckler, 2005). The importance of the concept of coping is highlighted by the fact that the ability to cope is the integral part of some definitions of stress. Lazarus (1966), for example, conceptualized stress as the interaction between the demands of the situation and the individual's ability to cope. Coping is an active response to resolve a stressful situation. It encompasses cognitive and other behavioural efforts to reduce or adapt to a stressor. Whatever the nature of the stressor, its impact is mitigated by two parallel and interacting systems: the ability to cognitively and behaviourally cope with the situation, and the ability to regulate biological functions to maintain homeostasis and respond to the perceived threat.

Stress Physiology and Mental Health

The etiology of mood disorders such as depression has often been explained through the diathesis-stress perspective, such as Beck's (1987) model of cognitive vulnerabilities. Diathesis is the constitutional vulnerability of individuals to stress and psychological distress. Such individual differences are based on genetic factors, physiological and psychological developmental factors, and lifetime experience. Researchers in psychophysiology have also documented biological markers of vulnerability for mood and anxiety disorders. One of the most consistent correlates of depression is a disruption of neuroendocrine functioning, as

evidenced by circadian rhythms of cortisol production by the hypothalamic-pituitary-adrenal (HPA) axis system (Parker et al., 2003). The HPA axis is one of the body's primary stress response systems. It is responsible for coordinated behavioural, neuroendocrine, autonomic, and immune responses to stressors, or threats to homeostasis. The HPA axis consists of a hormonal feedback loop that includes the hypothalamus in the brain, the pituitary gland and the adrenal glands located above the kidneys. In addition to these structures, the HPA axis receives important regulation from various parts of the brain.

Cortisol, a glucocorticoid released from the adrenal cortex, is the end product of the HPA axis. The HPA axis comprises the tissues of the hypothalamus, pituitary and adrenal cortices; regulatory neuronal inputs; and a variety of releasing factors and hormones. Physical and psychological stressors, cause the hypothalamus to secrete corticotropin-releasing factor (CRF) and arginine vasopressin (AVP) into the pituitary gland. This causes adrenocorticotrophic hormone (ACTH) to be released from the pituitary. Cortisol is then released from the adrenal cortex in response to ACTH (Parker et al., 2003)

Cortisol has many central and peripheral effects that are mediated via at least two glucocorticoid receptor subtypes: the high-affinity type I receptor (or MR) and the low-affinity type II receptor (or GR). Glucocorticoids bind to these receptors which interact with other transcription factors or bind to specific DNA, and promote the expression of various genes involved in several neuronal and peripheral regulatory systems (see Parker et al., 2003 for review).

The activity of the HPA axis itself is highly regulated. The hypothalamus receives neuronal inputs from a number of brain regions including the amygdala (involved in arousal

and emotional response), hippocampus (involved in memory retrieval and consolidation) and other nuclei within the midbrain. The HPA axis is also controlled by an autoregulatory mechanism mediated by cortisol. Cortisol binds to glucocorticoid receptors in the HPA axis tissues and hippocampus and acts as a strong negative regulator of HPA activity, so that the HPA axis can reduce its cortisol output when it detects unusually high levels of cortisol in the bloodstream. This is often referred to as a *negative feedback loop* and can be thought of as an automatic shut-off switch or breaker that prevents further secretion of cortisol when levels reach a critical point that could be damaging to the system and to signal the body that the stressor no longer calls for mobilization of the body's resources (Dallman et al, 2000).

Cortisol is the principal hormonal end-product of human HPA axis activity, and has a number of essential functions, including appetite stimulation and energy mobilization. The HPA axis is responsive to stressors that threaten homeostasis, either psychologically or physically (Dallman et al., 2000). As a principal component of the body's so called "fight or flight" mechanism, the HPA axis serves to adaptively increase heart rate, blood pressure, and blood flow to the brain. In acute stress the HPA axis also inhibits sleep, feeding, digestion, reproduction and physical growth.

Although glucocorticoid production is essential for survival, chronic overproduction is associated with a significant disruption of cellular functioning and regulatory mechanisms, which, in turn, leads to widespread physiological dysfunction at both the central and peripheral level. Abnormalities in the function of the HPA axis have been described in people experiencing psychiatric disorders (Checkley, 1996). These abnormalities may be related to the ability of circulating glucocorticoids, such as cortisol, to alter the secretion of HPA hormones through their binding to the mineralcorticoid (MR) and glucocorticoid receptors

(GR) in HPA tissue, and in other limbic system structures such as the hippocampus responsible for emotional regulation, memory and learning. One of the consequences of these abnormalities is that the negative feedback loop becomes compromised and the HPA axis is no longer able to optimally regulate its own output of cortisol. The effects of chronic stress on HPA activity differ markedly from acute stress (Dallman et al., 2000). Chronic stress leads to persistently dysregulated levels of cortisol (hypercortisolism and hypocortisolism) which are responsible for deleterious effects on the body's regulatory, growth and immune systems. Prolonged exposure to elevated levels of circulating cortisol has a number of physiological consequences that parallel some physical and mental symptoms of depression, including exhaustion, altered mood, and sleep and appetite disturbance and neurotransmitter imbalance. Because a wide variety of stressors (both internal and external) reliably activate the HPA axis, and because cortisol is the end product of HPA activation, this hormone has been viewed as a reliable indicator of stress induced pathology. The "glucocorticoid cascade hypothesis" (Sapolsky, 2000) suggested that prolonged overproduction of cortisol, whether as a result of ongoing, chronic stress or a genetic predisposition to HPA axis hyperactivity, damages brain structures essential for HPA axis regulation. Such damage has been hypothesized to lead to a "feed-forward" circuit, or "degenerative cascade" in which ongoing stressors drive cortisol overproduction indefinitely, possibly due to the neurotoxicity of elevated cortisol on the hippocampus. Because of the capacity of high concentrations of glucocorticoids to disrupt cellular and neuronal functioning in ways that can lead to a host of disorders, this glucocorticoid overproduction is believed to directly contribute to many of the adverse behavioural and physiological sequelae associated with chronic stress (Raison et al., 2003)

A spectrum of psychiatric conditions have been associated with increased HPA axis activity including, melancholic depression, obsessive compulsive and panic disorders, and eating disorders, among others. (Tsigos & Chrousos , 2002; Miller, Chen & Zhou, 2007). However, another group of conditions have been associated with decreased activation of the HPA axis in which chronically reduced secretion of CRH may result in pathological hypo-arousal and enhanced negative feedback, as has been shown in individuals with atypical seasonal depression (Stewart et al., 2005), post traumatic stress disorder (Handwerger, 2009) and chronic fatigue syndrome (Roberts et al., 2009) . Hyperactivity of the HPA axis in major depression is one of the most consistent findings in psychiatry. A significant percentage of patients with major depression have been shown to exhibit increased concentrations of cortisol, an exaggerated response to adrenocorticotrophic hormone, and an enlargement of both the pituitary and adrenal glands. Multiple lines of research have provided evidence that, during depression, dysfunction of limbic structures, including the hippocampus and hypothalamus, results in hypersecretion of CRF and AVP, which in turn induces HPA activation (Parker et al., 2003). It is not known whether this hyperactivation is a precursor or consequence of depression, although a number of studies have shown that CRF may play a role in the behavioural signs and symptoms of depression. When CRF is administered in animals it causes decreased libido, decreased appetite, psychomotor alterations and disturbed sleep (Owens & Nemeroff 1999). Several studies have shown that cortisol-mediated feedback inhibition is impaired in patients with major depression, as evidenced by the dexamethasone (a synthetic glucocorticoid) suppression test. It has thus been suggested that the negative feedback that cortisol exerts on its own secretion is somehow altered in psychiatric conditions such as depression.

The HPA axis also interacts with the brain's monoamine neurotransmitter systems. It is widely accepted that depressed individuals show disruptions in serotonin and dopamine activity. CRF neurons in the hypothalamus are directly innervated by catecholaminergic, serotonergic and dopaminergic neurons. These neurotransmitters have been shown to directly influence CRF release. For example, serotonin has been found to exert a stimulatory influence on CRF while norepinephrine has a more variable effect, being stimulatory at low doses and inhibitory at high doses. Recent formulations have suggested that elevated cortisol levels, probably caused by stressful life events, may themselves lower serotonin function in the brain and that this in turn leads to depressive symptoms (Dinan, 1994 in Cowen 2002). It has been suggested that cortisol is one of the key biological mediators through which life stress lowers brain serotonin function, thereby causing depression in vulnerable individuals (Dinan 1994).

Studies conducted both in animals and in humans suggest that stress in early phases of development can induce persistent changes in the ability of the HPA axis to effectively respond to stress in adulthood (see Heim et al., 2008 for review). A number of studies have investigated the link between stressful living conditions and cortisol activity. Some studies provide support for a positive association between mean cortisol levels and levels of stress over time (i.e., number of stressors experienced on a given day, workload among air traffic controllers, caring for an ailing relative, and unemployment) (Ockenfels et al., 1995; Decker, 2000) or histories of childhood neglect or sexual abuse (Tsigos & Chrousos 2002). However, others have shown negative correlation between cortisol levels and stress, such as exposure to combat (Yehuda et al., 1996). Vaillancourt et al (2008) found that occasional and frequent verbal peer victimization was associated with *hyposcretion* of cortisol in a sample of 12 year

old children . The inconsistent nature of these results may be due to the variable methodology employed by researchers with respect to the precise measures of cortisol, the nature of the stressors, time elapsed since the stressor, and the characteristics of the sample (Rosal et al., 2004). However, the evidence that stress may disrupt HPA axis functioning suggests that this could be one physiological mechanism by which stress adversely impacts health.

Normatively, HPA activity and hence, cortisol production, follows a diurnal pattern. The most common circadian rhythm is for the HPA axis to produce the greatest amounts of cortisol during sleep, such that circulating levels peak shortly after awakening and then drop rapidly over the morning, drop more gradually over the afternoon, and are lowest in late afternoon or early evening (Kirschbaum & Hellhammer, 2000). Conversely, depressed individuals often show what has been described as “high, flat curves” of cortisol production: The morning and afternoon declines are greatly reduced, such that cortisol levels are less variable over, and higher for more of, the diurnal period (Souetre et al., 1989). This is thought to result from dysregulation of the HPA axis negative feedback loop. Indeed, melancholic depression can be seen as a state of chronically and excessively activated stress response, possibly due to a failure of normal regulatory influences. Gold (2002) has suggested that melancholic depression is a disorder of adaptation, in which the stress response required for survival becomes dysregulated and is the very source of the illness.

Not all depressed people show high, flat cortisol curves, and not all people who show such curves are depressed, but the correspondence has been documented in a number of studies of adults, and some research with adolescents (Deuschle et al, 1997; Kurina et al., 2004; Van den Bergh & Van Calster; 2009). This consistent but not invariant link between physiology and mental health suggests that, in and of itself, a dysregulated cortisol rhythm

may confer vulnerability for depression-related problems, but is not a sufficient condition for the manifestation of depression. Thus, it again appears that a diathesis-stress model may be in effect. High, flat circadian rhythms of cortisol production may act as a diathesis, or risk factor, that increases the likelihood of individuals developing depression *when stress is experienced*. From this perspective, one would expect that individuals with normatively-functioning HPA axis systems are less likely to develop depression under conditions of prolonged stress, and individuals with high, flat cortisol curves are not likely to develop depression if they are not living in stressful conditions (Meyer et al., 2001).

LGB-Related Stress, Internalized Homonegativity, and Mental Health

Being LGB places an individual at risk for experiencing chronic stress. Chronic stress is strongly associated with depression, anxiety and suicidality, and other mental health problems. Studies have shown that there are links between LGB-related stress, IH, and psychological distress. Individuals who report more LGB-related stress also report higher levels of psychological distress (Meyer, 1995; Rosario et al., 2002; Lewis et al, 2003). Internalized homonegativity is also positively correlated with depressive and anxiety symptoms in LGB adults (Igartua et al., 2003; Szymanski et al., 2001; DiPlacido, 1998; Williamson, 2000; Meyer and Dean, 1998). Similarly, LGB adolescents and young-adults have more anxiety symptoms when they report experiencing more IH and experiencing more LGB-related stressful life events (Rosario et al., 2002).

The consistency of these results clearly suggests that experiences of LGB-related stress act against the personal well-being of LGB individuals. However, although consistent, the magnitude of these associations should not be exaggerated, and one should not assume that all

LGB individuals are at risk for psychopathology. The majority of LGB young adults can be expected to have experienced homophobia, to have witnessed its effects on others, or at the very least to have been raised in a heterosexist society where homosexuality is implicitly devalued. And yet, only a minority (albeit larger than that of the general population) of LGB persons present with clinical, or even sub-clinical, levels of mental health problems, as evidenced by the actual rates of psychological disorders in this population (Lock, 1999; Matthews et al., 2002; Safren and Heimberg, 1999; Cochran et al., 2003). Therefore, other factors must moderate or mediate the adverse effects of homophobic prejudice on LGB young adults, placing some at risk, but protecting most from, the development of depression and other problems.

One way to approach the study of risk factors is by adopting the framework of the diathesis-stress model (Monroe & Simons, 1991). In this model, individuals display a predisposition towards psychopathology based on genetic, biological or early learning experiences. Mental disorders are produced by the interaction of this vulnerability with precipitating events in the environment. In other words, an internal vulnerability or predisposition (diathesis) interacts with adverse environmental conditions and life events (stressors) to trigger maladaptive behaviors or psychological disorders (Monroe & Simmons, 1991). Within this general model, individual variation in diathesis may be expected to influence the susceptibility to the emergence of problems. For example, individuals with greater underlying vulnerability may require objectively less stressful events to trigger the manifestation of problems. As such, psychological disorders emerge if a vulnerable individual experiences more stress than can be effectively managed.

Because diathesis-stress models address the interactions between premorbid risk factors and situational stressors, they are useful for describing who is likely to develop a disorder and who is not (Ingram & Luxton, 2005). Presumably, the diathesis-stress model can be applied to the study of mental health problems in LGB populations.

Relatively little is known about how the physiological and psychological effects of stress function together to impact well being of LGB individuals. Almost all LGB young adults can be expected to have experienced homophobia, through direct victimization or indirect stigmatization, although the amount and quality of LGB-related stress varies across individuals. Although probably less universal, many LGB young adults can also be expected to manifest some degree of IH. Only a portion of those LGB young adults, however, are likely to manifest such elevated IH that their negative self-regard could be seen as putting them at risk for depression and other psychopathology. Thus, other factors are likely to be involved in the links between LGB-related stress, IH, and health. Stress physiology is likely to be one of these factors, and in particular, HPA axis activity may play a mediating or moderating role in the relations between stress and psychosocial well-being in LGB young adults. It is also possible that IH itself functions as an internal chronic stressor which may impact cortisol levels. Any or all of these mechanisms may be functioning in a parallel, interactive or additive fashion.

Mediation and moderation of the effects of stressors on mental health are not mutually exclusive mechanisms. Both could be occurring in the developmental psychopathology of LGB young adults. For example, the experience of repeated stressors can undermine physiological or psychological regulatory capacity, which is manifested as symptoms of mental health problems (mediation). As well, these diminished regulatory capacities could

leave one in a vulnerable state such that the continued experience of stressors cannot be managed effectively and result in emergence of mental health problems (moderation). Given that LGB individuals are at heightened risk for mental health problems, it is important to understand the complex nature of the risk processes that underlie these problems. Only with such understanding can psychologists, public health professionals, and public policymakers work toward designing effective prevention and intervention programs.

The Present Study

The main goal of the present study was to investigate the interplay of biological, psychological, and social factors that are thought to contribute to positive and negative indices of mental health in a community sample of LGB emerging adults. Given the relative independence of the literatures on LGB mental health and cortisol dysregulation, and given current models of developmental psychopathology, both dysregulated cortisol rhythms and/or IH could be postulated to function either as mediators or as moderators of the links between social stress or support and mental health problems. A potential contribution of the current study could be to demonstrate how physiological stress and psychological stress function distinctly to impact mental health problems.

In this study, mental health in a sample of LGB youth and young adults was measured using symptom-focused scales of depression, anxiety, suicide history, and self-esteem. As well, a set of primary predictors of mental health were drawn from the extant literature on LGB mental health. These stress and support measures consisted of gay-related stress, victimization, social support, and parental support. Two factors were selected as potential mediators or moderators of the links between the primary predictors and the mental health

indices. Diurnal cortisol slope was selected as a biological diathesis factor that could either protect against, or exacerbate, the associations of the stress and support predictors with mental health. IH was selected as a psychological diathesis factor that could function in a parallel manner.

Both mediation and moderation models were explored in the present study. In the mediation model external stressors are thought to impact an internal factor (IH and/or cortisol) creating a dysregulated state which then may present as mental health problems.

The moderation model is consistent with diathesis-stress mechanisms in which individuals with dysregulated cortisol or elevated IH are more sensitive to the impact of stressors on mental health.

Hypotheses

Several sets of hypotheses were proposed to examine the biopsychosocial determinants of mental health in a sample of LGB emergent adults.

Hypothesis set 1. Replication of previous correlational research was expected. The first set of hypotheses predicted that gay-related stress, social-support, parental support and victimization would be related to the outcome mental health measures of depression, anxiety, self esteem and suicidality in this sample.

1a. LGB emerging adults who experienced more gay-related stress and victimization were expected to report more symptoms of anxiety, depression, and suicidality, and lower self esteem.

1b. In contrast, it was predicted that higher levels of social and parental support would be associated with lower symptoms of anxiety, depression, and suicidality, and with higher self esteem.

Hypothesis set 2. Replication of previous research findings were also expected for Internalized Homonegativity (IH).

2a. It was hypothesized that IH would be positively associated with depression, anxiety, and suicidality, and negatively associated with self-esteem.

2b. LGB emerging adults were expected to report more IH when they had histories of more victimization and gay-related stressful events, and less social and parental support.

Hypothesis set 3. Replication of previous evidence for links between cortisol activity and mental health measures was expected. Novel links between cortisol slope and other mental health indices were explored.

3a. It was hypothesized that higher, flatter cortisol slopes would be associated with increased symptoms of depression. Further, in an exploratory fashion, it was hypothesized that blunted cortisol slope would be positively associated with other symptoms of emotional distress. Specifically, higher, flatter cortisol slopes were expected to be correlated with increased anxiety and suicidality, and with lowered self-esteem.

3b. A novel hypothesis was proposed, such that blunted cortisol slope would also be associated with the experience of more gay-related stressful events and higher number of victimization events related to LGB identity.

The interaction between IH and Cortisol was also of interest. It was hypothesized that individuals experiencing both high levels of IH and more blunted cortisol profiles would report

more symptoms of depression, anxiety , suicidality and lower self esteem than those with more negatively sloped cortisol profiles.

Hypothesis set 4. Tests of mediation and moderation were performed to evaluate the processes by which IH functioned in the relation between stress/support measures and mental health indices.

4a. It was hypothesized IH could mediate the associations between the stress/support measures and mental health indices. The development of greater IH was expected to be associated with experiences of external stressful and victimizing events related to LGB identity, and to a lack of social and parental support. In turn, IH was expected to be associated with psychological distress as evidenced by higher depression, anxiety and suicidality scores and lower self-esteem, and to account for the relations between experiences of stress and support and levels of psychological distress.

4b. It was also hypothesized that IH might serve as a psychological moderating variable between stress, support, victimization on the one hand and mental health indices on the other. As such, high levels of IH could function as exacerbators of the relation between high stress /victimization and psychological distress. It is thus posited that the effect of Stress, Support, Victimization on Depression, and Suicide on mental health would differ depending on individual variations in IH.

Hypothesis set 5. Tests of mediation and moderation were performed to evaluate the processes by which diurnal HPA activity functioned in the relation between stress/support measures and mental health indices.

5a. Tests of mediation were performed to determine the degree to which dysregulated cortisol diurnal rhythm could function as a mediator of the relation between stress/support

measures and mental health indices. It was hypothesized that mechanistically, stress, and victimization would act through cortisol to affect mental health. It was hypothesized that the development of dysregulated cortisol activity would be a function of external stressful and victimizing events related to LGB identity. In turn, dysregulated cortisol would be associated with psychological distress as evidenced by higher depression, anxiety and suicidality scores and lower self-esteem.

5b. It was also hypothesized that dysregulated cortisol rhythm might serve as a physiological moderating variable between stress, support, victimization on the one hand and mental health indices on the other. As such, high, flat cortisol secretion slopes could function as exacerbators of the relation between high stress /victimization and psychological distress. It is thus posited that the effect of Stress, Support, Victimization on Depression, and Suicide would differ depending on individual variations in cortisol activity, an index of adaptation to stress.

Methods

Participants

Twenty-eight lesbian and bisexual young women and 35 gay and bisexual young men (Total $N = 63$; ages 17-26, $M = 21.3$, $SD = 2.6$) were recruited through LGB youth and student groups in community, college and university settings, a university health clinic, and a university-affiliated multidisciplinary psychiatric clinic serving the LGBT community on the island of Montreal, Quebec. The subjects were recruited through active outreach to the members of the aforementioned organizations after having requested permission from the group administrators.

Seven participants did not comply with cortisol saliva collection and were excluded from the study. An additional 5 participants were also excluded because they were taking prescription medications known to increase cortisol levels, such as corticosteroids, and neuroleptics. A total of 4 participants were on antidepressant selective serotonin reuptake inhibitors, a class of compounds known to normalize cortisol levels. These were not excluded from the study, given that depressive symptoms were a major outcome measure in our sample. It was reasoned that although antidepressants tend to alter cortisol activity over time (Deuschle et al., 2003), any significant findings when including these responders would only serve to increase the sensitivity of the model.

Demographic Information

Subjects were asked to report their age, sex, ethnicity, continent of birth, degree of urbanization of their place of residence, relationship status and length thereof, employment status, education and income. Subjects were also asked to disclose their religion, if any, and rate the importance of religion in their lives on a 4-point scale.

First language was reported as French by 33% of the sample, English by 57% and 10% had a first language other than French or English, but were fluent in at least one of those languages. The majority (74%) of the sample was Caucasian. In terms of employment status, 71% were students, 19% were employed with the remaining 10% unemployed.

Eighty-one percent of the sample had come out to their mother (mean age at coming out: 18.6 years), and 77% had come out to their father (mean age: 18.5 years). Self-identification as LGB occurred on average at 15.7 years of age as reflected by responses to the item: “At what age did you first consider that you were probably homosexual/bisexual?” Most participants indicated that disclosure of their sexual orientation to the “majority of significant people in (their) live(s)” occurred, on average, at 19 years of age. However, 22% of the sample reported that this type of disclosure had not occurred. For the most part, therefore, these participants comprise a sample of urban- or suburban-dwelling young adults who recognized their sexual minority status during adolescence, had disclosed their sexual orientation, and were living openly as LGB individuals.

Procedures

Depending on where they were recruited, participants were initially contacted individually or in a group context. In the latter situations, as often as possible, both a male and a female bilingual representative were present to introduce the study and address any questions about the purpose and methodology. All participants were handed an envelope that contained the questionnaire booklet and the saliva sampling kit as well as detailed instructions for sample collection and for returning the package in hand, through scheduled pick-up, to the investigative team. The instructions included ways to contact the experimenter should the participants have any questions about completing the procedures. Wherever possible,

standardized French translations were obtained for all measures. Measures that had not yet been translated were subject to translation by the bilingual experimenter and validated by back translation to English. Participants were asked to provide a means of contacting them (group meeting location, email or phone number), should the pre-scheduled pick-up time for the completed measures and saliva samples need to be re-booked.

Measures

Sexual Orientation Scale. Sexual orientation was assessed on three dimensions: behavior, attraction and self-identification. Each question was assigned a 7-point Kinsey scale (Kinsey et al., 1948; Igartua et al., 2003) ranging from “*exclusively heterosexual*” to “*exclusively homosexual*”. In this sample, 85.7% of subjects self-identified as predominantly or exclusively homosexual, and 12.5% self-identified as bisexual.

Anxiety Symptoms. The Beck Anxiety Inventory (1990) measures symptoms as well as the severity of anxiety in adults and adolescents. The BAI Consists of 21 descriptive statements of behavioral, emotional and cognitive anxiety symptoms which are rated on a four-point scale. Higher scores on the BAI indicate greater levels of self-reported anxiety. The BAI has been found to have high reliability in terms of internal consistency, as well as concurrent and construct validity (Beck and Steer, 1993). Cronbach’s alpha for the BAI was $\alpha = .92$ for this study.

Depressive Symptoms. The Beck Depression Inventory - Second Edition (BDI-II, 1996) is a 21-item self-report instrument for measuring the severity of depression in adults and adolescents aged 13 years and older. It was developed for the assessment of symptoms corresponding to criteria listed in Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV). The BDI-II is the most frequently used self-report scale for

depression. It exhibits excellent psychometric properties and emphasizes cognitive, attitudinal symptoms of depression. Cronbach's alpha for the BDI-II was $\alpha = .88$ for this study.

Suicidality. Suicidal ideation and behavior in the past week and over the lifetime was measured with a 6 item questionnaire (Igartua et al., 2003). Although not a standardized scale, it was based on commonly used psychiatric questions regarding suicide (passive wish to die, suicidal thoughts, plan, and attempt). Two other questions inquired about lifetime history of suicidality. Questions were answered by "yes" or "no". Total score for suicidality was the sum of all "yes" responses. Participants also indicated the age(s) at which they had first experienced suicidal thoughts or had made attempts. Cronbach's alpha for the suicidality questionnaire was $\alpha = .56$ for this study.

Self Esteem. Self esteem was measured using the Rosenberg Self Esteem Inventory (Rosenberg, 1989). This 10-item questionnaire is scored on a 4-point Likert-type scale ranging from *strongly disagree (1)* to *strongly agree (4)*. Higher scores indicate stronger sense of global self esteem. The Rosenberg Self Esteem Inventory has been commonly used in research on LGB youth (Savin Williams, 1990; D'Augelli 1995). Its reliability and validity have been well documented (Goldsmith, 1986; O'Brien, 1985). Cronbach's alpha for the Rosenberg Self Esteem Inventory was $\alpha = .91$ for this study.

Homonegativity. Homonegativity (previously termed Internalized Homophobia) was measured using the Nungesser Homosexual Attitudes Inventory – Revised (NHAI-R - Shidlo, 1994). It consists of 39 items, rated true or false, that inquire about attitudes towards homosexuality, resulting in three subscales and one total scale: personal homonegativity, global homonegativity, disclosure, and total score. The total score was used in this study. This measure has been previously shown to correlate with psychological distress in LGB

individuals (Igartua et al, 2003), and is the most popular tool for measuring homonegativity studies of LGB individuals. Cronbach's alpha for the NHAI-R was $\alpha = .91$ for this study.

LGB-related Victimization. Victimization related to one's sexual orientation was measured with the Scope and Prevalence of Anti-Lesbian/Gay Victimization (Piklington & D'Augelli, 1995). It inquires about the lifetime frequency of 9 forms of aggressive acts, perpetrated against LGB youth because of their perceived sexual orientation, ranging from verbal abuse, to major physical assault. For each type of aggressive act, the frequency can be rated as either "never", "once", "twice", "more than twice". Victimization perpetrated by family members and non-family members were assessed separately, although ultimately only a sum total of both victimization by family and non-family was used in this study Cronbach's alpha for Victimization by Non-Family was $\alpha = .83$ for this study. Cronbach's alpha for the Victimization by Family was $\alpha = .77$ for this study. The correlation between the two scales was significant, $r = .67$, $p < .01$.

LGB-Related Stress. The incidence of stressful life events related to LGB identity was assessed with the Revised Gay-Related Stressful Life Events Measure (Rosario et al, 2002). This is a 12-item True/False questionnaire that inquires about the incidence of stressful interpersonal conflicts with friends, relatives, teachers and colleagues/bosses with regard to the responder's sexual orientation as well as the incidence of hate crimes and trouble with the law. Questions include "*Increased number of arguments with your parents about your homosexuality/bisexuality?*" - *Getting in trouble with the police because of your homosexuality/bisexuality?* - *Being physically assaulted in a gay bashing incident?*" Subjects were asked to report the occurrence of these events over the last 3 months. Cronbach's alpha for the Gay Related Stressful Life Events was $\alpha = .58$ for this study.

Social Support. Social support is known to be a moderator of the deleterious effects of perceived social and physical stress. The Interpersonal Relationship Inventory (IPRI – Tilden et al., 1990) is a 39-item measure of perceived social support. Items are scored on a 5-point Likert type scale. The measure contains three subscales: social support, reciprocity and conflict. Social support is defined as the perceived availability of helping behaviors by members of the social network, outside the family. Reciprocity is defined as the perceived availability or occurrence of an exchange of emotional or tangible goods or services. Conflict is defined as perceived discord or stress in relationships caused by behaviors of other or the absence of behaviors of others, such as withholding of help. Psychometric evaluation of the IPRI showed good construct validity, internal consistency and test-retest reliability for the three subscales (Tilden et al, 1990). In this study, the subscales scores for support and reciprocity were combined to form a new subscale defined as *Positive Social Support*. Cronbach's alpha for the new scale of Positive Social Support was $\alpha = .76$ for this study.

Perceived Quality of Parental Relationships. The Network of Relationships Inventory (NRI- Furman & Buhrmester, 1985) consists of 30 questions, which assess 10 relationship qualities. These include six social provisions: a) reliable alliance, b) enhancement of worth, c) instrumental help (guidance), d) companionship, e) affections, and f) intimacy (disclosure). Four other qualities are also rated: a) relative power of the child, b) conflict, c) satisfaction, and d) importance of the relationship. Cronbach's alphas of the scale scores were all greater than 0.60 in the original standardization sample. Participants answered questions for relationships with both mother/stepmother and father/stepfather separately. Average scores items related to all provisions except relative power of child and conflict were summed to

create a new scale, Positive Parent Support. Cronbach's alpha for the new scale of Positive Parent Support was $\alpha = .92$ for this study.

Physiological measures

Cortisol. The participants were instructed to collect six saliva samples in plastic tubes (Salivettestm) over the course of one day in order to measure circadian rhythms of cortisol production. Included in the questionnaire packet was a clear, re-sealable plastic bag which contained six sampling vials as well as instructions. Participants were asked to refrain from drinking water at least 5 min before sampling, and to refrain from eating, drinking (except water), smoking, and brushing teeth at least 60 min before sampling. Each sample was collected by having the participant chew on an absorbent cotton swab which was then placed in a dual-chamber plastic vial. The participants were instructed to provide the first sample at awakening, the next four samples at two-hour intervals throughout the day, and the sixth sample four hours subsequent to the fifth sample, in order to obtain a full 12 hour profile. Thus, a typical set of samples could provide measures of salivary cortisol concentration at 7 AM, 9 AM, 11 AM, 1 PM, 3 PM, and 7 PM. Participants also answered a series of questions at the exact time of sampling which included brief questions about: 1) time/date; 2) location, 3) stressful events, 4) mood, 5) food or drink, 6) caffeine and 7) cigarette use, in order to account for possible confounds due to cortisol fluctuations in response to drugs and stress. Saliva samples were kept at 4-8C at the participant's home refrigerator until they were returned to the experimenter.

Saliva samples were stored in a -80C medical freezer at Concordia University for 6-12 months and then sent to the laboratory of Dr. Claire-Dominique Walker at the Douglas Hospital of the McGill University Health Centre for assay. Salivary cortisol concentrations

were determined using an enzyme-linked immuno-assay procedure. Saliva was absorbed into a small cotton roll and expressed through a plastic tube into a sterile vial ('Salivette' device). Cortisol levels were determined by specific radio-immunoassays using a commercial kit from DSL (DSL-2000; Sanofi Diagnostics, Montreal, Canada). The inter-assay coefficient of variation from previous studies at the Douglas Hospital Research Laboratories was 7.5% (on a range of 0.8–1.2ug/dl dose). Salivary cortisol was assayed using a kit from DSL (DSL, Webster, Texas) with procedures modified to increase the sensitivity of the cortisol assay. Briefly, 50 mL of saliva are incubated with 50 mL of ¹²⁵I-cortisol and 50 mL of primary antibody and placed in a water bath at 37 C for 2 h. A 500 mL PBS wash is added to the tubes prior to centrifugation. The pellet, representing the bound cortisol is then counted in a gamma counter and cortisol concentrations are calculated from a standard curve. The limit of detection for cortisol was 0.01 mg/dl, and the intra- and interassay variability were 4.0 and 4.6%, respectively (on a range of 0.1–10 mg/dl dose).

Raw values of cortisol were subjected to log transformation to correct for positive skew. Six-point individual cortisol profiles were then plotted with log-transformed values using Hierarchical Linear Modeling to compute each participant's slope of the diurnal cortisol curve. The HLM Level 1 Dataset contained the nMol/ml values for each of the 6 time points of cortisol sampling per subject, as well as the time of saliva collection. The HLM Level 2 Dataset contained all other psychosocial measures. Cortisol slopes with more negative values (steeply decreasing) were indicative of more adaptive regulation of cortisol secretion (greater decreases in cortisol production from waking throughout the course of the day). Slopes with smaller negative values, or with zero or positive values, were indicative of the 'high, flat cortisol curves' linked to HPA dysregulation. The area under the curve of 6 time-point cortisol

profiles was also calculated as an additional aggregate measure of cortisol secretion, but will not be reported on in this study as it did not significantly correlate with measures of interest.

Results

Prior to conducting statistical analyses for the current study, the data were examined for outliers, and skewed distributions. As expected, the cortisol measures were positively skewed and were adjusted using log transformation (Hruschka et al., 2005). Alpha was set at .05 for all analyses. Marginal effects ($p < .10$) were also interpreted with caution.

Preliminary Analyses and Data Reduction

In order to decrease the probability of type 1 error, 3 composite scales were created, thereby decreasing the number of variables in the analyses. Table 1 shows the correlations between the original scales and the new, composite scales. Total Victimization was defined as the sum of scores for Victimization by Family and Victimization by Non-Family. Positive Social Support consisted of the sum of the subscales of Social Support and Reciprocity of the Interpersonal Relationships Inventory. Parent Positive Relationship consisted of the mean sum of scaled scores, combining father and mother on the Network of Relationships Inventory subscales of a) reliable alliance, b) enhancement of worth, c) instrumental help (guidance), d) companionship, e) affections, and f) intimacy (disclosure). g) satisfaction, and h) importance of the relationship.

Table 2 displays the 2-tailed Pearson correlations for all measures used in this study. As expected, scales of current symptoms of depression, anxiety, and IH were all significantly positively correlated to one another, and all were negatively correlated to self esteem. LGB-related stress was positively correlated to both IH and flatter cortisol

Table 1

Correlations between Original and Composite Scales

	Victimization by Non-Family	Total Victimization
Victimization by Family	.67**	.87**
Victimization by Non-Family		.95**

	Positive Relationship Father	Mean Parent Support
Positive Relationship – Mother	.30*	.86**
Positive Relationship - Father		.43**

	IRI- Reciprocity	Total Positive Social Support
IRI – Support	.75**	.93**
IRI - Reciprocity		.94**

Note: * = $p < .01$; ** = $p < .001$

Table 2

Pearson Correlations Matrix for all Measures

	Anxiety	Self Esteem	Suicide	IH	LGB Stress	Victim	Parent Support	Social Support	Cort. Slope
Depression	.71**	-.74**	.09	.40**	.28*	.02	-.29*	-.31*	.28*
Anxiety		-.51**	.20	.33*	.20	.14	-.23	-.11	.15
Self Esteem			-.05	-.51**	-.22	.15	.35**	.43**	-.11
Suicidality				-.05	-.04	.19	-.27	.00	.25
IH					.29*	-.08	-.28*	-.38**	.10
GRS						.19	.19	.12	.35*
Victim.							.12	.12	.01
Parent Support								.29*	-.19
Social Support									.10

Note: * = $p < .01$; ** = $p < .001$; 2-tailed

slopes. Parental and social support were both positively correlated to self esteem and negatively correlated to IH.

Descriptive Analyses

Table 3 displays the means and standard deviations for predictors and mental health measures in this sample. On average this sample was minimally depressed according to standard scoring of the BDI (Total score on BDI of 0-13 is considered minimal range, 14-19 is mild, 20-28 is moderate, and 29-63 is severe.) This sample also scored low relative to the norm sample on the BAI scale of anxiety. However, nearly 70% of the sample reported lifetime thoughts of suicide and 30% reported at least one lifetime suicide attempt. Self-esteem was also relatively high in this sample. LGB-related stress was not particularly elevated in this sample. History of victimization was relatively high but expected for a sample of LGB young adults. Overall social support and parental support were moderate. IH was moderate, as well.

Overall, the mean slopes of participants' diurnal cortisol activity followed a normative profile (Figure 1). On average, cortisol decreased over a 12 hour period throughout the day. The cortisol concentration at "wake-up" was shown to be significantly higher than samples 3, 4 and 5, which were obtained 4, 6, and 8 hours after waking, respectively, and which did not differ from each other. This relative lack of consistent variation over the midday-period may have been due to individual variation in the exact times at which participants provided their samples, as more consistently significant decreases in cortisol levels over the day are noted when time of sampling is controlled across participants (Smyth et al., 1997).

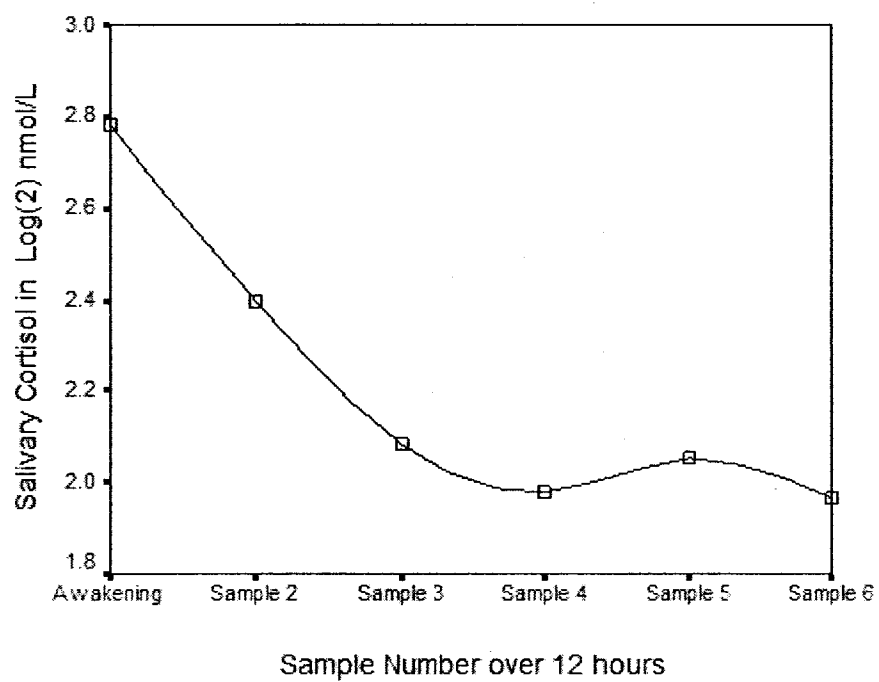
Table 3

Descriptive Statistics for all Psychosocial Measures

	Mean	S.D.	Min / Max
Depression - BDI	9.1	6.7	0 / 33
Anxiety - BAI	14.8	9.9	0 / 47
Suicidality	1.1	.99	0 / 4
Self Esteem (Rosenberg)	30.4	5.6	15 / 40
LGB-Related Stress (Rosario)	.96	1.37	0 / 5
Internalized Homonegativity – NHAI	81.6	19.8	52 / 132
Victimization	23.5	6.64	18 / 50
Parent Support - NRI (Mean of Mother & Father)	3.35	.57	1.70 / 4.37
Social Support - IRI (Mean of Support & Reciprocity subscales)	53.4	5.4	41.5 / 64

Figure 1

Mean Diurnal Cortisol Values over Time for Entire Sample



Tests for Covariates: Gender, Language and Age

T-tests were conducted to determine whether significant differences existed in the psychological measures with respect to age, gender, and language. English responders were found to have higher levels of Internalized Homonegativity (IH) ($t = 2.1, p < .05$), lower self esteem ($t = -3.6, p < 0.01$), more symptoms of depression ($t = 3.2, p < .01$), and less social support ($t = -1.9, p < .06$) than French participants. Male participants reported more victimization ($t = 4.5, p < .001$) and less parental support ($t = -2.4, p < .05$) than females. Age was not significantly associated with the target variables. Given the identified differences, language and gender were included as covariates in all subsequent analyses.

Relation between Stress, Support and Mental Health

The first set of analyses addressed the prediction that increased LGB Related Stress (GRS) and Victimization, and decreased Social and Parental Support would be associated with increased symptoms of Depression, Anxiety, and Suicidality, and lower scores for Self-Esteem.

Analysis plan for hypothesis 1. Hierarchical linear regression analyses were used to separately predict scores on scales of depression, anxiety, suicidality and self esteem, from scores on social support, parental support, victimization and LGB-related stress. A total of four step-wise hierarchical regressions were conducted to predict the four mental health outcomes. For each regression, the control variables of language and sex were entered in the first step, followed by social support, parental support, victimization and LGB-related stress in the second step. Finally, in order to test whether

protective factors moderated the relations between risk factors and psychosocial outcomes, four interactions were entered in the third step: Social Support x Victimization, Social Support x LGB-Related Stress, Parental Support x Victimization, and Parental Support x LGB-Related Stress. As recommended by Aiken and West (1991), predictor variables were centered prior to computing interaction terms, and centered variables were entered into the regression analyses. Interaction terms were examined by regressing the appropriate mental health variable on the support variable at low ($-1\ SD$) and high ($+1\ SD$) values of Parental Support or Social Support, respectively.

For example, in order to test the directionality of a significant Social Support X Victimization interaction, two new variables, High Social Support and Low Social Support, were created by subtracting or adding, respectively, 1 SD from the centered Social Support score. These two variables were then multiplied by the centered Victimization score to create 2 new interaction terms : Low Social Support X Victimization; and High Social Support X Victimization. These two new terms were then entered into two separate hierarchical regressions. One would interpret the association between Victimization and the mental health outcome variable (e.g. Depression) at High and Low levels of Social Support to understand the nature of the interaction.

Stress, support and depression. The hierarchical regression predicting Depression is presented in Table 4. The predictors accounted for a significant amount of the variance in depression scores, $\text{adj. } R^2 = .22$, $F(4, 44) = 3.70$, $p = .011$. LGB young adults tended to report less depression when they had more parental support, whereas they reported significantly more depression when they experienced more LGB-related stress.

Table 4

Hierarchical Regression Predicting Depression from Support, Victimization, LGB-Related Stress

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.12	2,48	3.25 *	Sex	-.05	-.40	.69
				Language *	-.35	-2.50	.01
2	.22	4,44	3.70 *	Parent Support +	-.25	-1.77	.08
				Social Support	-.19	-1.38	.17
				LGB-Related Stress (GRS) *	.28	2.16	.04
				Victimization	.11	.71	.48
3	.14	4,40	2.76 *	Parent Support x Victimization	-.56	-.38	.70
				Parent Support x GRS	.22	1.40	.17
				Social Support x Victimization	.11	.75	.46
				Social Support x GRS*	-.35	-2.88	.01

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

However, this latter effect was moderated by a significant interaction between LGB-related stress and social support in the prediction of depression. Young adults with relatively little social support reported significantly more depression when they experienced more LGB-related stress ($\beta = .58; p < .01$), but LGB-related stress was not associated with depression for youths with more social support ($\beta = .01, ns$).

Stress, support and anxiety. Table 5 displays the results of the hierarchical regression predicting Anxiety. The predictors at each step did not account for a significant amount of the variance in anxiety scores, adj. $R^2 = .116$ $F(4, 44) = 1.51, p = .ns$. However, one marginally significant interaction effect of Social Support X Victimization was present. LGB young adults who experienced more social support, reported significantly more anxiety when they also had experienced a higher incidence of past victimization ($\beta = .70, p = .03$). In young adults with less social support, victimization was not associated with anxiety ($\beta = -.36, ns$).

Stress, support and suicidality. Table 6 displays the results of the hierarchical regression predicting Suicidality. The predictors at each step did not account for a significant amount of the variance in anxiety scores, adj. $R^2 = .09, F(4, 44) = 1.12, p = ns$. . However, one marginally significant main effect of parental support was present. LGB young adults with less parental support tended to report higher incidence of past suicidal ideation. As well, social support moderated the association between victimization and suicidality. LGB young adults with more social support reported a higher history of suicidal thoughts and behaviors when their history of victimization was also high ($\beta = .77, p = .02$). In contrast, LGB young adults who experienced less social support tended to report a lower history of suicidal thoughts when their history of victimization was higher ($\beta = -.61, p = .08$).

Table 5

Hierarchical Regression Predicting Anxiety from Support, Victimization, LGB-Related Stress

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.04	2,48	1.04	Sex	-.09	-.65	.52
				Language	-.20	-1.37	.18
2	.12	4,44	1.51	Parent Support	-.24	-1.49	.14
				Social Support	-.02	-.11	.91
				LGB-Related Stress (GRS)	.15	.99	.32
				Victimization	.19	1.11	.27
3	.11	4,40	1.44	Parent Support x Victimization	-.08	-.45	.65
				Parent Support x GRS	.14	.78	.44
				Social Support x Victimization +	.33	1.95	.06
				Social Support x GRS	-.19	-1.32	.19

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 6

Hierarchical Regression Predicting Suicidality from Support, Victimization, LGB-Related Stress

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.034	2,47	.82	Sex	-.13	-.88	.05
				Language	-.11	-.76	.45
2	.09	4,43	1.12	Parent Support +	-.30	-1.82	.07
				Social Support	-.07	-.45	.65
				LGB-Related Stress (GRS)	-.16	-1.05	.30
				Victimization	.19	1.08	.28
3	.14	4,39	1.89	Parent Support x Victimization	.19	1.06	.29
				Parent Support x GRS	-.00	-.02	.98
				Social Support x Victimization*	.43	2.50	.02
				Social Support x GRS	-.05	-.32	.75

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Stress, support and self-esteem. Table 7 displays the results of the hierarchical regression predicting Self Esteem. The predictors accounted for a significant amount of the variance in self-esteem scores, adj. $R^2 = .29$, $F(4, 44) = 5.99$, $p = .001$. LGB young adults reported higher self-esteem when they had more parental support ($\beta = -.33$, $p = .01$), more social support ($\beta = -.27$, $p < .04$), and lower LGB-related stress ($\beta = -.24$, $p < .05$).

Summary . LGB young adults experiencing higher levels of LGB-related stress reported more depressive symptoms only under conditions of low social support. In contrast, LGB young adults who had experienced more incidences of victimization reported more symptoms of anxiety and suicidality only under conditions of higher social support. Suicidal symptoms were also higher under conditions of low parental support. Higher levels of social support and parental support were associated with higher self esteem. LGB young adults experiencing more LGB-related stress had lower self esteem.

Overall, social support seemed to function as a moderator of several associations between stress factors (LGB-related stress and victimization) and mental health. However, the nature of the moderation was not the same across mental health measures, with low social support exacerbating effects of LGB-related stress on depression while buffering against the effects of victimization on anxiety and suicidality.

Relation between Cortisol and Internalized Homonegativity

Prior to testing the relation between internalized homonegativity (IH), cortisol and mental health, a hierarchical regression was performed to test the association between IH and

Table 7

Hierarchical Regression Predicting Self Esteem from Support, Victimization, LGB-Related Stress.

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.18	2,48	5.29 *	Sex	-.00	-.02	.98
				Language	.42	3.21	.00
2	.29	4,44	5.99 *	Parent Support *	.33	2.59	.01
				Social Support *	.27	2.15	.04
				LGB-Related Stress (GRS) *	-.24	-2.05	.05
				Victimization	.03	.26	.80
3	.04	4,40	.85	Parent Support x Victimization	.01	.08	.93
				Parent Support x GRS	-.08	-.52	.60
				Social Support x Victimization	-.19	-1.40	.17
				Social Support x GRS	.13	1.11	.27

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Cortisol slope, while controlling for language and gender. This was necessary to ensure that these two factors were independent from one another for subsequent tests of moderation, and to assess risk of multi-collinearity. IH and Cortisol slope values were centered prior to analysis. Results showed that IH was unrelated to Cortisol Slope ($\beta=.11$, $p=.47$). As such, these two factors could be tested as separate, unrelated predictors. Their interaction could be examined in stepwise hierarchical regressions by creating an interaction term on centered scores of IH and cortisol slope, as explained below.

Relation between Internalized Homonegativity, Cortisol and Mental Health

Analysis plan for hypotheses 2 and 3. It was predicted that IH scores and Cortisol Slope would be positively correlated with indices of Depression, Anxiety and Suicidality, and negatively correlated with Self Esteem. Hierarchical linear regression analyses were used to separately predict scores on scales of depression, anxiety, suicidality and self esteem, from scores on IH and cortisol. A total of four step-wise hierarchical regressions were conducted to predict the four mental health outcomes. For each regression, the control variables of language and sex were entered in the first step, followed by IH and cortisol in the second step. The interaction of IH x Cortisol was entered in the third step. IH and Cortisol were centered prior to computing interaction terms, and centered variables were entered into the regression analyses. Significant interaction terms were examined by regressing the appropriate mental health index on cortisol at low (-1 SD) and high (+1 SD) values of IH.

Internalized homonegativity, cortisol and depression. Table 8 displays the results of the hierarchical regression for Depression. The predictors accounted for a significant amount of the variance in depression scores, adj. $R^2 = .16$, $F(2, 46) = 5.27$, $p = .01$. LGB young adults reporting higher levels of IH, experienced significantly higher levels of depression. Similarly, those experiencing flatter Cortisol secretion profiles also experienced significantly higher levels of depressive symptoms. The interaction between IH and Cortisol Slope also approached significance. Further analysis of the interaction revealed that it was only in LGB young adults who experienced higher IH that flatter Cortisol profiles were associated with depressive symptoms ($\beta = .47$, $p = .01$). At lower levels of IH, Cortisol slope profiles were not associated with depressive symptoms ($b = .049$, $p = .29$). Alternatively, one could reinterpret the interaction, to state that it was only in LGB young adults who experienced flatter Cortisol profiles that higher IH was associated with depressive symptoms ($\beta = .50$, $p = .006$). At more normal Cortisol profiles, IH was not associated with depressive symptoms ($b = .079$, $p = .66$).

Internalized homonegativity, cortisol and anxiety. Table 9 displays the results of hierarchical regression for Anxiety. The predictors accounted for a near-significant amount of the variance in anxiety scores, (adj. $R^2 = .10$, $F(2,46) = 2.80$, $p = .07$). LGB young adults reporting higher levels of IH also reported significantly more symptoms of anxiety. Cortisol Slope and the interaction between IH and Cortisol Slope were not significantly associated with anxiety in this sample.

Table 8

Hierarchical Regression Predicting Depression from Internalized Homonegativity and Cortisol Slope

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.12	2,48	3.25*	Sex	-.01	-.65	.52
				Language	-.35	-1.37	.18
2	.16	2,46	5.27 *	Internalized Homonegativity *	.30	2.34	.02
				Cortisol*	.25	1.99	.05
3	.04	1,45	.2.89	IH x Cortisol +	.21	1.70	.096

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 9

Hierarchical Regression Predicting Anxiety from Internalized Homonegativity and Cortisol
Slope

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.04	2,48	1.04				
				Sex	-.09	-.65	.52
				Language	-.20	-1.37	.18
2	.10	2,46	2.80 *				
				Internalized Homonegativity*	.29	2.10	.04
				Cortisol	.13	.93	.36
3	.00	2,45	.01				
				IH x Cortisol	.02	1.04	.92

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Internalized homonegativity, cortisol and suicidality. Table 10 displays the results of the hierarchical regression for Suicidality. Taken together, the predictors did not account for a significant amount of the variance in self-esteem scores, adj. $R^2 = .07$, $F(2, 45) = 1.72$, $p = ns$. LGB young adults with flatter Cortisol secretion profiles tended to report a higher historical incidence of suicidal thoughts and behaviors. IH and the interaction between IH and Cortisol Slope were not significantly associated with suicidality.

Internalized homonegativity, cortisol, and self-esteem. Table 11 displays the results of the hierarchical regression for Self Esteem. The predictors accounted for a significant amount of the variance in self-esteem scores, (adj. $R^2 = .18$, $F(2, 46) = 6.53$, $p = .003$). LGB young adults reporting higher levels of IH also reported lower self-esteem. Cortisol slope and the interaction between IH and cortisol slope were not significantly associated with self-esteem.

Relation between Internalized Homonegativity, Cortisol and Stress / Support

It was hypothesized that IH would be highest and Cortisol Slope would be flatter, when scores for risk factors (Victimization, LGB-Related Stress) were high and protective factors (Parent Positive Relationship and Social Support) were low

Internalized Homonegativity. Table 12 displays the results of hierarchical regression for IH. The predictors accounted for a significant amount of the variance in IH scores, adj. $R^2 = .30$, $F(4, 45) = 4.75$, $p = .003$. LGB young adults reporting more social support experienced significantly less IH. Those who experienced higher levels of LGB Related Stress experienced significantly more IH. No interactions were found to be significant.

Table 10

Hierarchical Regression Predicting Suicidality from Internalized Homonegativity and Cortisol Slope

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.03	2,47	.82	Sex	-.13	-.88	.38
				Language	.11	.76	.45
2	.07	2,45	1.72	Internalized Homonegativity	-.05	-.32	.75
				Cortisol +	.26	1.87	.07
3	.02	1,44	.91	IH x Cortisol	-.14	-.95	.34

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 11

Hierarchical Regression Predicting Self Esteem from Internalized Homonegativity and Cortisol Slope

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.18	2,48	5.29*	Sex	-.00	-.02	.98
				Language	-.42	-3.20	.002
2	.18	2,46	6.53*	Internalized Homonegativity +	-.43	-3.48	.001
				Cortisol	-.07	-.60	.55
3	.01	2,45	1.04	IH x Cortisol	-.12	-1.02	.31

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 12

Hierarchical Regression Predicting Internalized Homonegativity from Stress and Support Measures.

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.002	2,48	.09	Sex	.04	.30	.76
2	.296	4,45	4.75*	Parent Support	-.13	-.15	.35
				Social Support*	-.40	-2.95	.00
				LGB-Related Stress (GRS)*	.33	2.49	.02
				Victimization	-.05	-.36	.71
3	.049	4,41	.77	Parent Support x Victimization	-.06	-.40	.69
				Parent Support x GRS	.08	.47	.64
				Social Support x Victimization	-.20	-1.30	.19
				Social Support x GRS	.09	.69	.49

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Cortisol Slope. Table 13 displays the results of the hierarchical regression for Cortisol Slope. The predictors accounted for a near-significant amount of the variance in cortisol slopes, adj. $R^2 = .16$, $F(4, 45) = 2.14$, $p = .09$. LGB young adults who reported higher levels of LGB Related Stress had flatter cortisol slopes. No interactions were found to be significant.

Summary. In sum, both higher IH and flatter cortisol slope predicted more LGB-related stress, more depressive symptoms and a higher historical incidence of suicidal symptoms in this sample. However, further analysis of the interaction revealed that it was only in those LGB young adults that experienced higher IH that flatter cortisol slope was associated with depressive symptoms.

LGB young adults who reported higher levels of IH experienced more LGB-related stress, more symptoms of anxiety, lower self esteem and less social support.

Of all the factors involved in this analysis, only LGB-related stress was related to both IH and Cortisol. In all other respects, IH and Cortisol seemed to be independently associated with different mental health outcomes and risk factors.

Testing Internalized Homonegativity and Cortisol as Mediators

Test of internalized homonegativity as a psychological mediating variable. A series of hierarchical regressions were performed to test the hypothesis that IH would function as a psychological mediating variable between stress, support measures on the one hand and mental health indices on the other. The procedures described by Baron and Kenny (1986; 1998) were used as the standard for establishing mediation. That is, the independent variable must have predicted the mental health outcome; the independent variable must also have predicted the putative mediator; the mediator must predict the mental health outcome when controlling for the independent variable; and the IV significantly drops in effect size when

Table 13

Hierarchical Regression Predicting Cortisol Slope from Stress and Support Measures.

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.004	1,49	.20	Sex	.06	.45	.65
2	.16	4,45	2.14*	Parent Support	-.19	-1.26	.21
				Social Support	.11	.74	.46
				LGB-Related Stress (GRS) *	.31	2.13	.04
				Victimization	-.04	-.22	.82
3	.06	4,41	.79	Parent Support x Victimization	.07	.42	.67
				Parent Support x GRS	.21	1.15	.26
				Social Support x Victimization	.16	.94	.35
				Social Support x GRS	-.02	-.17	.87

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

predicting the mental health outcome and controlling for the mediator. Only the relations between stress/support measures and mental health indices that proved statistically significant in earlier analyses were included. Therefore, tests of mediation by IH could only be performed on Depression and Self Esteem. Drops in effect size and significance from Step 2 to Step 3 were interpreted and followed by Sobel tests of mediation.

Mediation by internalized homonegativity of the link between LGB-related stress and depression. IH and LGB-related stress were significantly associated with each other, and both were significantly associated with depression. Therefore, the test of the mediating role of IH in the relation between LGB-related stress and depression was justified (see Table 14). After controlling for sex and language effects, LGB Related Stress was positively associated with Depression. When IH was added in the final step, $\text{adj. } R^2 = .05$, $F(1, 46) = 1.91$, $p = .08$, the β for LGB Related Stress dropped and only approached significance. The correlation between IH and Depression also approached significance after accounting for the variance explained by LGB Related Stress. Sobel's test indicated that the reduction in the association between LGB-related stress and depression was not significant, Sobel $z = 1.43$, $p = .15$, indicating that IH was not a statistically significant mediator of this association.

Mediation by internalized homonegativity of predictors of self-esteem. IH was significantly associated with both LGB-related stress and parent support. LGB Related Stress, Parent Support and IH were all significantly associated with Self Esteem. Therefore, the test of the mediating role of IH in the relations between both LGB-related stress and Parent Support as predictors of Self Esteem was justified.

Table 14

Hierarchical Regression - Test of Mediation by Internalized Homonegativity of Relation between LGB Related Stress and Depression

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.12	2,48	3.25*	Sex	-.05	-.40	.69
				Language	-.35	-2.55	.01
2	.10	1,47	6.39*	LGB Related Stress*	.33	2.53	.01
3	.05	1,46	1.91	(LGB Related Stress) +	.25	1.83	.07
				IH +	.25	1.79	.08

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 15

Hierarchical Regression - Test of Mediation by Internalized Homonegativity of Relation between Parent Support, LGB-Related-Stress and Self Esteem

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.18	2,48	5.29*	Sex	-.00	-.02	.98
				Language	.42	3.29	.00
2	.23	2,46	8.97*	Parent Support*	.43	3.51	.001
				LGB Related Stress	-.19	-1.62	.11
3	.06	1,45	4.87*	(Parent Support)*	.34	2.80	.007
				(LGB Related Stress)	-.11	-.97	.33
				IH*	-.28	-2.21	.03

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 15 displays the results of the hierarchical regression for the mediation test of IH on the associations of LGB Related Stress and Parent Support with Self-Esteem. The predictors accounted for a significant amount of the variance in self-esteem scores, $\text{adj. } R^2 = .23$, $F(2, 46) = 5.99$, $p = .001$. However, it was noted that without social support and victimization in the model (Table 15), LGB Related Stress was no longer significantly associated with self-esteem. Parent Support was negatively correlated with Self Esteem. When IH was added in the final step, ($\text{adj. } R^2 = .06$, $F(1, 45) = 4.87$, $p = .03$) the β for Parent Support dropped to $\beta = -.34$ but remained significant. The relation between Self Esteem and IH was also significant ($\beta = -.28$, $p = .03$). Sobel's test indicated that the reduction in the association between parent support and self-esteem approached significance, Sobel $z = 1.82$, $p = .07$, indicating that IH partially mediated this association.

Test of cortisol slope as physiological mediating variable. A series of hierarchical regressions were performed to test the hypothesis that cortisol slope would function as a physiological mediating variable between stress, support measures on the one hand and mental health indices on the other. Again, only stress/support measures and mental health indices that proved statistically significant in earlier analyses were included. Therefore, tests of mediation by cortisol slope could only be performed on Depression and Suicide. Drops in effect size and significance from Step 2 to Step 3 were interpreted and followed by Sobel tests of mediation.

Mediation by cortisol of the link between LGB- stress and depression. Cortisol slope and LGB-related stress were significantly associated with each other, and both were significantly associated with depression. Therefore, the test of the mediating role of cortisol in the relation between LGB-related stress and depression was justified. Table 16 displays the results of the hierarchical regression for the mediation test of Cortisol on the association

Table 16

Hierarchical Regression – Test of Mediation by Cortisol Slope of Relation between LGB-Related Stress and Depression

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.12	2,48	3.25*	Sex	-.05	-.40	.68
				Language	-.35	-2.55	.01
2	.10	1,47	6.39*	LGB-Related Stress*	.33	2.53	.01
3	.03	1,46	1.91	LGB-Related Stress +	.26	1.89	.06
				Cortisol	.19	1.38	.17

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

between LGB Related Stress and Depression. LGB Related Stress was positively associated with Depression. When Cortisol was added in the final step, the β for LGB Related Stress dropped and again only approached significance. However, the relation between Cortisol and Depression was not significant when simultaneously accounting for the variance explained by LGB Related Stress. Exploratory follow-up with Sobel test indicated that Cortisol did not mediate the relation between LGB Related Stress and Depression, Sobel $z = 1.22$, $p = .22$.

Mediation by cortisol of the predictors of suicidality. Table 17 displays the results of the hierarchical regression for the mediation test of Cortisol on the association between Social Support, Victimization, Social Support x Victimization, and Suicidality. After controlling for sex and language effects, and accounting for the non-significant variance explained by Social Support, and Victimization, the interaction between Social Support X Victimization was positively related to Self Esteem, and approached significance ($\beta = .30$, $p = .07$). When Cortisol was added in the final step, none of the factors, including cortisol were significantly associated with Suicidality.

Summary. In sum, tests of mediation showed that IH did not mediate the relationship between LGB-related stress and depression, but mediated part of the association between parent-support and self esteem. Similarly, cortisol slope values did not mediate the relationship between LGB-related stress and depression, nor did it mediate the relationship between social support, and victimization on the one hand and suicidality on the other. Overall, neither IH nor cortisol slope could be considered clear mediators of the relationship between stress or support measures and mental health outcomes in this sample.

Table 17

Hierarchical Regression – Test of Mediation by Cortisol of Relation between Support, Victimization and Suicidality

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.03	2,47	.82	Sex	-.13	-.88	.38
				Language	.11	.76	.45
2	.02	2,45	.39	Social Support	-.04	-.23	.82
				Victimization	.15	.88	.38
3	.07	1,44	3.38*	(Social Support)	.10	.63	.53
				(Victimization)	.10	.56	.58
				Social Support x Victimization*	.30	1.8	.07
4	.05	1,43	2.55	(Social Support)	.06	.37	.71
				(Victimization)	.09	.56	.58
				(Social Support x Victimization)	.26	1.60	.12
				Cortisol	.23	1.60	.12

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Testing Internalized Homonegativity and Cortisol as Moderators

Analysis plan. A series of hierarchical regressions were performed to test the hypothesis that IH would function as a psychological *moderating* variable, and that Cortisol Slope would serve as a physiological *moderating* variable, between Stress and Support predictors and Mental Health outcomes.

Hierarchical linear regression analyses were used to first separately predict scores on scales of depression, anxiety, suicidality and self esteem, from scores on social support, parental support, victimization and LGB-related stress, and then test whether IH or cortisol moderated these relationships. A total of eight step-wise hierarchical regressions (four for IH and four for Cortisol) were conducted to test moderation of the four mental health outcomes. For each regression, the control variables of language and sex were entered in the first step, followed by social support, parental support, victimization, LGB-related stress and either IH or Cortisol in the second step. Finally, four interactions were entered in the third step. For IH these consisted of Social Support x IH, Parental Support x IH, Victimization x IH and LGB-Related Stress x IH. For Cortisol these consisted of Social Support x Cortisol., Parental Support x Cortisol, Victimization x Cortisol and LGB-Related Stress x Cortisol As recommended by Aiken and West (1991), predictor variables were centered prior to computing interaction terms, and centered variables were entered into the regression analyses. Interaction terms were examined by regressing the appropriate mental health variable on the support variable at low ($-1\ SD$) and high ($+1\ SD$) values of either IH or cortisol, respectively.

Moderation by internalized homonegativity of the link between stress / support measures and depression. Table 18 displays the results of the hierarchical regression to test whether IH moderated the relation between stress and support measures, and depression.

Significant interactions are indicative of statistical moderation. The interaction terms accounted for a significant amount of the variance in depression scores, (adj. $R^2 = .14$, $F(4,39) = 2.62$, $p = .05$). It was found that IH moderated the link between Social Support and Depression ($\beta = -.36$, $p < .01$) and approached significance in moderating the link between Parental Support and Depression. ($\beta = .27$, $p = .06$).

In LGB young adults with lower IH, social support was not associated with depressive symptoms ($\beta = .32$, ns). In those with higher IH, social support was negatively associated with depression ($\beta = -.42$, $p = .02$). Conversely, in LGB young adults with low IH, Parental support was strongly negatively associated with depressive symptoms ($\beta = -.72$, $p < .01$). In those with high IH, parental support was not associated with depression ($\beta = -.06$, $p = ns$).

Moderation by IH of the link between stress / support measures and anxiety. Table 19 displays the results of the hierarchical regression to test whether IH moderated the relation between stress and support measures, and anxiety. It was found that IH moderated the link between Parental Support and Anxiety and approached significance in moderating the link between Social Support and Anxiety.

In LGB young adults with low IH, Parental support was strongly negatively associated with anxiety symptoms ($\beta = -.70$, $p = .02$). In those with high IH, parent support is not associated with anxiety ($\beta = .14$, $p = ns$). Conversely In LGB young adults with low IH, social support tended to be positively associated with anxiety symptoms ($\beta = .40$, $p = .11$). In those with high IH, social support was not associated with anxiety ($\beta = -.12$, $p = ns$).

Table 18

Hierarchical Regression for Depression – Test of Moderation by Internalized Homonegativity

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.12	2,48	3.25*	Language	-.35	-2.55	.01
				Sex	-.05	-.40	.69
2	.23	5,43	3.06*	Parent Support	-.23	-1.59	.12
				Social Support	-.15	-1.04	.31
				Victimization	.11	.72	.47
				LGB Related Stress +	.24	1.74	.09
				IH	.12	.79	.44
3	.14	4,39	2.62*	Parent Support X IH +	.27	1.92	.06
				Social Support X IH*	-.37	-2.78	.01
				Victim. X IH.	.01	.05	.96
				LGB-Related Stress X IH	.17	1.01	.32

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 19

Hierarchical Regression for Anxiety – Test of Moderation by Internalized Homonegativity

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.04	2,48	1.04	Language	-.20	-1.37	.18
				Sex	-.09	-.65	.52
2	.23	5,43	1.66	Parent Support	-.19	-1.42	.16
				Social Support	.06	.38	.71
				Victimization	.19	1.16	.25
				LGB Related Stress	.07	.43	.67
				IH	.24	1.44	.16
3	.14	4,39	1.64	Parent Support X IH*	.34	2.10	.04
				Social Support X IH +	-.26	-1.70	.10
				Victim. X IH.	.21	1.26	.22
				LGB-Related Stress X IH	.17	.85	.40

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Moderation by IH of the link between stress / support measures and suicidality.

Table 20 displays the results of the hierarchical regression to test whether IH moderated the relation between stress and support measures, and suicidal symptoms. No significant interactions were found, indicating no existing statistical moderation effects in this sample.

Moderation by IH of the link between stress / support measures and self-esteem.

Table 21 displays the results of the hierarchical regression to test whether IH moderated the relation between stress and support measures, and self-esteem. It was found that IH approached significance in moderating the link between Social Support and self-esteem. In LGB young adults with lower IH, Social Support was not associated with self esteem ($\beta = -.07$, $p = ns$). In those with high IH, Social Support was positively associated with self esteem ($\beta = .37$, $p = .03$)

Moderation by cortisol slope of the link between stress / support measures and depression. Table 22 displays the results of the hierarchical regression to test whether Cortisol moderated the relation between stress and support measures, and depression. The interaction terms accounted for a near-significant amount of the variance in depression scores, (adj. $R^2 = .11$, $F(4,39) = 2.15$, $p = .09$). It was found that Cortisol significantly moderating the links between Depression and Social Support; Victimization and LGB-Related Stress.

In LGB young adults with more negatively sloped (normal) cortisol slope, social support was not associated with depression ($\beta = .05$, $p = ns$). In those with flatter (dysregulated) cortisol slope (more positively sloped) social support was negatively associated with depression ($\beta = -.40$, $p = .02$).

Table 20

Hierarchical Regression for Suicidality – Test of Moderation by Internalized Homonegativity

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.03	2,47	.82	Language	.11	.76	.45
				Sex	-.13	-.88	.38
2	.09	5,42	.90	Parent Support(*)	-.31	-1.84	.07
				Social Support	.054	.31	.76
				Victimization	.18	1.07	.29
				LGB Related Stress	-.14	-.85	.40
				IH	-.06	-.37	.71
3	.02	4,38	.27	Parent Support X IH	-.21	-.16	.87
				Social Support X IH	-.05	-.29	.77
				Victim. X IH.	-.19	-1.00	.32
				LGB-Related Stress X IH	.01	.03	.98

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 21

Hierarchical Regression for Self Esteem – Test of Moderation by Internalized Homonegativity

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.18	2,48	5.23*	Language	.42	3.21	.002
				Sex	-.00	-.02	.98
2	.32	5,43	5.43*	Parent Support*	.29	2.29	.03
				Social Support	.20	1.54	.13
				Victimization	.03	.23	.82
				LGB Related Stress	-.17	-1.40	.17
				IH	-.21	-1.55	.13
3	.05	4,39	1.10	Parent Support X IH	-.19	-1.42	.16
				Social Support X IH +	.22	1.76	.08
				Victim. X IH	.01	.10	.92
				LGB-Related Stress X IH	.04	.27	.78

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 22

Hierarchical Regression for Depression – Test of Moderation by Cortisol

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.12	2,48	3.25*	Language	-.35	-2.55	.01
				Sex	-.05	-.40	.69
2	.24	5,43	3.32*	Parent Support	-.21	-1.50	.14
				Social Support	-.22	-1.54	.13
				Victimization	.11	.74	.46
				LGB Related Stress +	.23	1.69	.098
				Cortisol Slope	.17	1.26	.21
3	.11	4,39	2.15 +	Parent Support X Cortisol	.18	1.47	.15
				Social Support X Cortisol*	-.26	-1.97	.05
				Victim. X Cortisol +	.25	1.97	.056
				LGB-Related Stress X Cortisol +	.25	1.71	.09

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

In LGB young adults with more negatively sloped Cortisol, victimization was not associated with depression ($\beta = .26$, $p = ns$). In those with flatter cortisol slopes, victimization was positively associated with depression ($\beta = .44$, $p < .05$).

Finally, In LGB young adults with more negatively sloped Cortisol , GRS was not associated with depression ($\beta = -.13$, $p = ns$). In those with flatter cortisol slopes, GRS was positively associated with depression ($\beta = .33$, $p = .02$).

Moderation by cortisol slope of the link between stress / support measures and anxiety. Table 23 displays the results of the hierarchical regression to test whether cortisol moderated the relation between stress and support measures, and anxiety. No significant interactions were found, indicating no existing statistical moderation effects in this sample.

Moderation by cortisol slope of the link between stress / support measures and suicide. Table 24 displays the results of the hierarchical regression to test whether Cortisol moderated the relation between stress and support measures, and suicide. Significant interactions indicate statistical moderation. It was found that Cortisol significantly moderated the link between Suicidal symptoms and Victimization. In LGB young adults with more negatively sloped cortisol, victimization was positively associated with suicide ($\beta = .70$, $p < .02$). In those with flatter cortisol slopes victimization was not associated with suicide ($\beta = -.24$, $p = ns$).

Moderation by cortisol slope of the link between stress / support measures and self-esteem. Table 25 displays the results of the hierarchical regression to test whether cortisol moderated the relation between stress and support measures, and self-esteem. No significant interactions were found, indicating no existing statistical moderation effects in this sample.

Table 23

Hierarchical Regression for Anxiety – Test of Moderation by Cortisol

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.04	2,48	1.0	Language	-.20	-1.37	.18
				Sex	-.09	-.65	.52
2	.12	5,43	1.2	Parent Support	-.23	-1.37	.18
				Social Support	-.02	-1.56	.88
				Victimization	.19	1.11	.27
				LGB Related Stress	.13	.82	.41
				Cortisol Slope	.06	.38	.71
3	.09	4,39	1.16	Parent Support X Cortisol	.24	1.57	.12
				Social Support X Cortisol	-.02	-.16	.87
				Victim. X Cortisol	.15	1.00	.32
				LGB-Related Stress X Cortisol	.22	1.28	.20

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 24

Hierarchical Regression for Suicidality – Test of Moderation by Cortisol

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.03	2,47	.82	Language	-.11	.76	.45
				Sex	-.13	-.88	.38
2	.16	5,42	1.65	Parent Support	-.24	-1.45	.15
				Social Support	.03	.19	.85
				Victimization	.19	1.14	.26
				LGB Related Stress	-.24	1.88	.12
				Cortisol Slope	.28	1.87	.067
3	.13	4,38	1.75	Parent Support X Cortisol	-.00	-.02	.98
				Social Support X Cortisol	.24	1.54	.13
				Victim. X Cortisol*	-.34	-2.31	.03
				LGB-Related Stress X Cortisol	-.04	-.266	.79

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Table 25

Hierarchical Regression for Self Esteem – Test of Moderation by Cortisol

Step	ΔR^2	df	ΔF	Predictors	β	t	p
1	.18	2,48	5.29*	Language	.42	3.21	.00
				Sex	-.00	-.02	.98
2	.29	5,43	4.68*	Parent Support*	.33	2.54	.01
				Social Support*	.27	2.09	.04
				Victimization	.03	.26	.79
				LGB Related Stress*	-.24	1.98	.05
				Cortisol Slope	.02	.15	.88
3	.02	4,39	.46*	Parent Support X Cortisol	-.14	-1.11	.27
				Social Support X Cortisol	.13	1.00	.32
				Victim. X Cortisol	-.07	-.57	.57
				LGB-Related Stress X Cortisol	-.05	-.35	.73

Note: * = $p < .05$; 2-tailed; + = $p < .1$ (non significant, marginal effect)

Summary. Statistical tests of moderation revealed that LGB young adults with higher levels of IH were more likely to report depressive symptoms when their social support was low, but the reverse was true for parent support. LGB young adults with *lower* IH reported more symptoms of depression when their parent support was low. Similarly, LGB young adults with *lower* IH were more likely to report more anxiety symptoms when their parental support was low. LGB young adults with higher IH were also more likely to report higher self esteem when their social support was also high.

Cortisol slope also functioned as a moderator of the relation between support, victimization and mental health. LGB young adults with dysregulated cortisol experienced more symptoms of depression only when their social support was low and victimization was high. The same effect did not hold true for suicidal symptoms. Only those with normal cortisol slope reported a higher incidence of past suicidality when their victimization was also high.

Discussion

The objective of the present study was to investigate the interplay of a set of biological, psychological, and social factors that were thought to contribute to positive and negative indices of mental health in a community sample of LGB young adults. LGB-related stress, parental support, social support, and victimization were examined as predictors of mental health, as measured by scales of depression, anxiety, suicidality and self-esteem. Particular attention was paid to the role of cortisol activity in conferring vulnerability to psychological distress in the face of social stress, and to the function of internalized homonegativity as a possible moderator or mediator of the effects of stress and support on mental health. Overall, this study attempted to elucidate some of the mechanisms by which homophobic environmental factors may negatively impact mental health in LGB young adults, and explain how resilience, in the face of these stressors, might be conferred.

Before discussing the results obtained in this study, it is necessary to state that in addition to statistically significant effects, marginal effects ($p < .10$) were interpreted, albeit with caution. Furthermore, given the low internal consistency of the LGB-Related Stress and Suicidality scales in this study, any interpretation of effects concerning these scales may be circumspect and clearly stand in need of replication. Table 26 highlights the statistically significant effects ($p < 0.05$) that were found in this study.

Are LGB-related Stressors and Support linked to Mental Health in LGB?

Several findings emerged from the current study. The evidence from the first set of inquiries lent credence to existing literature showing a link between LGB-related stress and support structures on the one hand, and mental health on the other. LGB young adults

Table 26.

List of statistically significant effects; $p < .05$.

Hypothesis 1

Outcome	Predictors	Significance
Depression	LGB Stress	$p = .04$
	Social Support X LGB Related Stress	$p = .01$
Suicidality	Social Support X Victimization	$p = .02$
Self Esteem	Parent Support	$p = .01$
	Social Support	$p = .04$
	LGB-Related Stress	$p = .05$

Hypotheses 2 and 3

Outcome	Predictors	Significance
Depression	IH	$p = .02$
	Cortisol Slope	$p = .05$
Anxiety	IH	$p = .04$
Self Esteem	IH	$p = .001$
IH	Social Support	$p = .001$
	LGB-Related Stress	$p = .02$
Cortisol Slope	LGB-Related Stress	$p = .04$

Hypothesis 4 (Mediations)

Outcome	Mediator	Significance
Self Esteem	IH	$p = .03$

Hypothesis 5 (Moderation)

Outcome	Moderator	Significance
Depression	Social Support X IH	$p = .01$
	Social Support X Cortisol	$p = .05$
Anxiety	Parent Support X IH	$p = .04$
Suicidality	Victimization X Cortisol	$p = .03$

experiencing more LGB-related stress had more depressive symptoms and lower self-esteem. These findings mirror the evidence in the current literature showing a link between gay-related stress and psychological distress (Rosario et al., 2002). However, in this study, the link between LGB-related stress and depression was only apparent in those with low social support. This interaction effect is a novel finding although not surprising given the importance of social support in the context of mental health in other literatures (Cohen, Underwood, & Gottlieb., 2000), and with sexual-minority youth in particular (Hershberger & D'Augelli, 1995; Munoz-Plaza et al., 2002). Accordingly, low parental support, in this sample, was associated with more symptoms of suicidality. Self esteem was related to more parental support, social support and less LGB-related stress.

In this study the importance of social support was evident particularly in relation to the experience of LGB-related stress. Perceptions of social support may provide a sense of validation, social acceptance and belonging that can protect against the negative effects of victimization and discrimination against LGB individuals (Williams, Connolly, Pepler, & Craig, 2005; Sheets & Mohr, 2009). This study's results are also in accordance with previous research that showed that family support was associated with LGB youths' greater self acceptance, which, in turn, was associated with fewer mental health difficulties and better self esteem (D'Augelli, 1995; Floyd, et al. 1999). Given that most sexual minority youth must negotiate a negative social climate on an ongoing basis they may benefit from social support, especially under conditions of LGB-related stressors. Accordingly, studies in LGB samples have shown a positive link between general social- and family-support and personal self-esteem, collective self-esteem, and overall psychosocial adjustment and negative associations

with loneliness, depression, and externalizing behavior (Grossman, D'Augelli, & Hershberger, 2000; Waller, 2001; Williams et al., 2005; Zea, Reisen, & Poppen, 1999).

As described earlier in this study, degree of perceived acceptance may have unique developmental consequences for sexual identity formation and tasks of stigma management, including one's ability to develop a positive identity as an LGB person (Elizur & Ziv, 2001).

Although the social and family support measure used in this study did not specifically address other's acceptance of the participant's sexual-orientation it is likely that this was a factor in self-reports of perceived support. Acceptance from family and peers may also be experienced by LGB youth as support for their ongoing self-esteem and social integration needs.

An alternative interpretation of the observed link between social support and depression, in this sample, would posit that depression may reduce levels of perceived support via cognitive mechanisms such as negative schema, and behavioral mechanisms, such as reduced interaction with others (Sheets & Mohr, 2009). Recent research has underscored the notion that the direction of influence between social support and depression may go both ways depending on the form of social support assessed. In a study of adolescent girls, low parental support was found to be a risk factor for increases in depressive symptomatology, whereas high depressive symptomatology was found to be a risk factor for future decreases in peer support (Stice, Ragan, & Randall, 2004). Studies using longitudinal designs are needed to address the question of direction of influence.

Overall, social support seemed to function as a moderator of several associations between stress factors (LGB-related stress and victimization) and mental health, but the nature of this moderation was not equivalent across measures. LGB-related stress was not linked to

anxiety and suicide symptoms in this study. Higher victimization was linked to more anxiety and suicide symptoms, but only under conditions of *high* social support.

One possible explanation for the finding that both anxiety and suicide were associated with experiencing more victimization in the context of higher social support is that, for some individuals, the sources of victimization and social support may have been one and the same. That is, the same friends and family members relied upon for social support may, at times, or in the past, have been perpetrators of aggressive and abusive acts towards the LGB young adult in question. In comparison to the effects of abuse from strangers or acquaintances, abuse by loved ones is arguably more damaging to one's mental health as the resulting conflict, cognitive dissonance and continued interpersonal contact with the perpetrator may be exceedingly difficult to cope with. The victimization questionnaire in this study inquired about lifetime incidence. Therefore, reports of current high social support are not incompatible with an earlier history of multiple victimizations by the members of that support network.

It is puzzling that the moderating effects of social support were not equivalent across mental health measures, with low social support exacerbating effects of LGB-related stress on depression while seemingly buffering against the effects of victimization on anxiety and suicidality. At first glance, one could make the assumption that victimization is simply another form of LGB-related stress and so should interact with social support in the same manner. However, while there is some conceptual overlap between gay-related stress and victimization, they were not statistically related in this sample ($r = .19$, $p = .18$; see Table 2), and thus measured unique adverse experiences. In addition, the LGB-related stress measure used in this study inquired about interpersonal conflicts within a more recent time frame (over

the past 6 months) as opposed to the victimization scale which measured the lifetime incidence of abusive actions. Taking the conceptual overlap into consideration, it may be that recent (proximal) gay-related stressors have a more direct influence on depressive symptoms and self-esteem, while older (distal) stressors are related to anxiety and suicidal history. Another explanation may be that victimization raises arousal and leads to much more vigilance and restlessness, typical of anxiety disorders.

Taken together, these effects suggest that LGB-related stress and victimization may play a substantial role in the mental health of LGB young adults, and that social relationships can either exacerbate or protect against the development of psychological distress. The well-being of the young adults in this sample was heavily influenced by the level of perceived social and parental support. At this developmental stage, peer approval continues to be relied upon for bolstering self-esteem and feelings of worth and security (Arnett, 2007).

Psychological conflict may have arisen when certain peer networks were previously, or simultaneously, sources of discord and victimization related to the individual's LGB identity. The investigation of a potential mechanism for this conflict was the subject of the subsequent set of inquiries.

Are Stress and Support Internalized at Psychological and Biological Levels?

The next set of inquiries investigated the link between IH and cortisol on the one hand and measures of gay-related stress, victimization, support and mental health on the other. IH and cortisol were not correlated to one another, but they were both positively correlated with LGB-related stress. Although these correlational findings do not imply a causative link, they do lend some degree of credence to the notion that external stressors may be internalized by the individual at both a psychological and biological level. In the case of IH, LGB-stress may

be interpreted by the individual as a negative consequence of sexual identity, and thus lead to a personal devaluation of one's LGB identity, poor self regard and shame. In the case of cortisol, LGB stressors may be salient enough to activate the HPA axis in such a way to disrupt normal endocrine functioning over the long-term. Cortisol dysregulation and IH can thus be seen as separate manifestations of LGB-related stress. Alternatively, or perhaps concurrently, pre-existing cortisol dysregulation may prime some individuals to react more strongly to ongoing stressors due to an altered appraisal of threat and lead them report higher levels of LGB-related and other stressors.

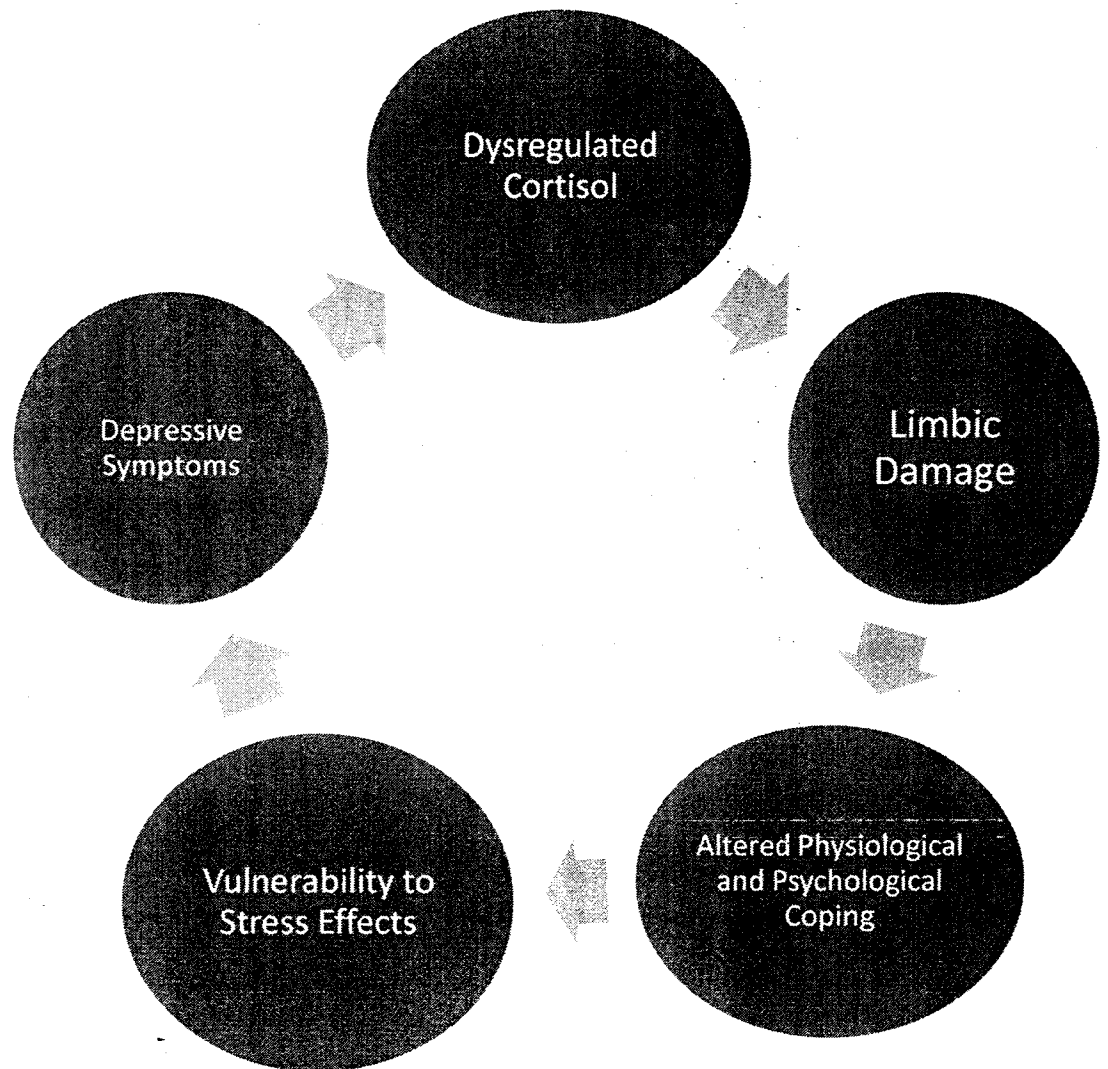
Interestingly, apart from depression, IH and cortisol slope each predicted separate and unique measures of mental health and psychological functioning. LGB young adults who reported higher levels of IH experienced more symptoms of depression, anxiety, and lower self esteem, whereas flatter cortisol slope predicted more depressive symptoms and a higher historical incidence of suicidal symptoms in this sample. The results of this study and other independent lines of research (Souetre et al., 1989; Igartua, 2003) have shown that both of these putative manifestations of LGB-related stress, IH and cortisol, are independently linked to depression.

A novel interaction effect between IH and cortisol that approached significance was also found. It was only in those LGB young adults who experienced higher IH that flatter cortisol slope was associated with depressive symptoms. The interaction effect could also be interpreted as showing that it was only in those LGB young adults that had flatter cortisol profiles that higher IH was associated with depressive symptoms. Although a causal interpretation cannot be inferred from these sets of findings, two tentative explanations can be suggested. It may be possible, that high levels of IH, associated with LGB-related stress,

function as compound stressors that cause dysregulation of cortisol activity, which ultimately drives depressive symptomatology. Another explanation, from a diathesis-stress perspective, is that individuals with dysregulated cortisol cannot sufficiently mobilize psychological and physiological defenses to cope with the effects of gay-related stress and IH, as chronically increased cortisol disrupts memory, sleep, and other processes. It may even be plausible that spontaneous or pre-existing cortisol dysregulation, leads to depression, and that depressive symptoms lead to low self regard and hatred of one's sexual identity, thus increasing IH. More likely, the interplay between all these factors is complex and not distinctly sequential. It may be that gay-related stress, IH, cortisol and depressive symptoms are all part of a "vicious cycle of stress" (Figure 3), whereby stressors and their so-called consequences feed back upon one another in a mutually influential manner. Another useful concept, *stress generation*, describes the contribution of the depressive person to the occurrence of stressful life events, and the intra personal variables and maladaptive skills that may contribute to continued stressors (Hammen, 1991). The significance of stress generation as a risk factor for depression arises from two sources. One is that depressed people or formerly depressed people have elevated risk of experiencing negative life events to which they have contributed. The second important implication is that increases in stressors likely contribute to the risk of recurrent or chronic depression, given the robust role of stressors as precipitants of depressive experiences. (Hammen & Shih, 2008). To further elucidate the mechanisms of this cycle, mediation and moderation models were proposed and tested.

Figure 3

A Conceptual Representation of the Vicious Cycle of Stress



Do Stress and Support Act Through Internalized Homonegativity and Cortisol to Influence Mental Health?

A set of analyses investigated whether IH or cortisol could function as mediators of the relations between stress, support and mental health. Overall, neither I.H. nor cortisol slope could be considered clear mediators of the relationship between stress or support measures and mental health outcomes in this sample. Only marginal evidence was found for the role of IH as a mediator of the link between parent support and self-esteem. This may indicate that low parental support leads to low-self esteem, in part through its effects on increasing IH, which in itself represents a degree of self-loathing for one aspect of individual identity. Low parental support may serve to increase the individual's conviction that their LGB identity is shameful, thus leading to higher levels of IH and negative self-regard, which in turn fuels depression. However, as this is a single-time-point, cross sectional study, statistical mediation must be interpreted with caution, and cannot reliably be used to infer causality.

Do the Effects of Stress and Support on Mental Health Change at Different Levels of Internalized Homonegativity or Cortisol?

Finally, a set of analyses was performed to test the hypotheses that IH and cortisol could separately function as moderators of the relations between stress, support and mental health. Simply put, does the relationship between stress, support and mental health change at different levels of IH or cortisol?

Internalized Homonegativity. In this study it was found that IH moderated some of the aforementioned effects but the nature of these interactions was not consistent across mental health measures. LGB young adults experiencing varying levels of IH benefited from

different relationships. Those with high IH seemed to benefit from social networks and those with low IH benefited from parental relationships. For individuals with low IH, parent support predicted less depression and less anxiety. For individuals with high IH, social support predicted less depression and better self esteem.

The protective factor of social support was only associated with decreased depression and better self esteem in those youths who were evidencing a maladaptive self-view regarding their LGB identity. In those that had low IH social support did not impact mental health. However, parent support seemed to play a bigger role in reducing depression and anxiety in those who were struggling less with their sexual identity. One possible explanation for this finding is that high IH overshadows the effects of parental support. At high levels of IH, parental support cannot provide enough of a secure framework to counteract the internalization of societal homonegativity. Instead, LGB young adults who struggle with IH may depend more on their peers' support to bolster their self esteem and protect against depression.

IH has consistently been shown to be related to poorer psychological functioning and risk-taking behaviours, and isolation in LGB samples (reviewed in Williamson, 2000). Attachment difficulties have also been shown to be related to higher levels of IH (Sherry, 2007). It is possible that insecure, fearful and preoccupied attachment styles limit the benefits of parental support, even when it is present, or serve to skew perceptions of parental support in those affected. If peer support is indeed protective, as the results of this study suggest, community level interventions, such as Quebec's Fondation Emergence and its creation of the annual International Day Against Homophobia, and school-based programs, such as GRIS-Montreal, entailing education about the fallacies of homophobic beliefs and changing attitudes among peer groups toward a more LGB-affirming stance, may serve to minimize the negative

impact of IH on LGB youth and young adults. Community level interventions would also help minimize the possible self-perceived stigma of internalized homonegativity as yet another affliction which must be “cured” in LGB individuals, and prevent an already vulnerable group from feeling pathologized, victimized and “sick with internalized homonegativity” (Russel and Bohan, 2006, p. 345). Moreover, if the interaction effects in this study gather more supportive evidence, counseling programs may elect to assess levels of IH in depressed or at-risk LGB youth in order to determine whether to focus first on increasing parental support (if IH is low) rather than improving social integration and social support (if IH is high).

Diurnal Cortisol Slope. Cortisol slope also moderated the relations between support, victimization and mental health. LGB young adults with higher, flatter diurnal cortisol slopes experienced more symptoms of depression when their social support was low or victimization and gay-related stress were high. Intriguingly, a reverse effect was true for suicidal symptoms. Only those with more normal cortisol slopes reported a higher incidence of past suicidality when their victimization was also high.

The moderation by cortisol of the link between stressors and depression is in keeping with a diathesis-stress perspective (Heim & Nemeroff, 2001). That is, individuals with dysregulated cortisol activity were more likely to suffer from depressive symptoms under conditions of high stress and low support. One should also note that although cortisol was correlated to depression in the first set of hierarchical regressions (Table 8), it dropped to non-significance in the tests of moderation (Table 22) when other stress and support factors were added in the same step. This indicates that there is some shared variance between cortisol and stress / support when predicting depression, most likely due to the significant link between cortisol and gay-related stress. Victimization was also non-significant in Step 2 of this

moderation test. Nonetheless, the interaction between cortisol and victimization was still significant in the final test of moderation (Step 3). This indicates a perfect interaction effect, whereby the effects of victimization on depression can only be understood in the context of dysregulated cortisol and vice versa.

As this is a cross-sectional study, we cannot know for certain if dysregulation of cortisol activity was a precursor rather than a consequence of depressive symptoms. Multiple lines of research have shown that cortisol activity is established early in development, and is partly heritable (Bartles et al., 2003)). However, research has also shown that cortisol activity may be permanently, or temporarily altered by acute stress chronic stress, or episodes of traumatic events (Burke et al., 2005). Sapolsky's (2000) glucocorticoid cascade hypothesis unites both lines of evidence. In the case of the LGB young adults in this study, prolonged overproduction of cortisol, whether as a result of ongoing stress or a genetic predisposition to HPA axis hyperactivity, may have damaged brain structures (especially the hippocampus) essential for HPA axis restraint. Such damage may have lead to a feed-forward circuit in which ongoing stressors continue to drive glucocorticoid overproduction indefinitely, and alter diurnal cortisol secretory patterns. In the LGB young adults in this study, depressive symptoms may have arisen, in part, due to the capacity of high levels of cortisol to disrupt neuronal circuits responsible for such processes as memory, appetite, reward, and sleep, compounded by, or in response to, the psychological effects of victimization.

That said, the finding that cortisol moderated the link between victimization and suicide in those with more normal diurnal slopes is all the more perplexing. One possible explanation relies on the previous finding in this study that dysregulated cortisol was, in itself, predictive of suicide, regardless of victimization history. LGB young adults are already at an

elevated risk for suicide if their diurnal slope of cortisol activity is flatter, and thus victimization contributes little to no predictive power in the statistical analysis. Looking at that correlation alone, it would seem that those with more normal slopes would be protected. However, this last moderation effect suggests that the added stressor of victimization pushes those “normally sloped” youths to suicidality. Therefore, one could conclude that victimization based on LGB identity is linked to suicide even in those youths whose HPA axis was not seriously altered by this stressor. Victimization may be powerful enough to push even those biologically resilient youths to suicidal behavior. Studies in nationally representative samples of adolescents have shown that victimization in school and in the community was linked to suicidality (Epstein & Spirito, 2009; Nickerson & Slater, 2009). In a LGB sample of youth and young adults, Savin-Williams and Ream (2003) showed that suicide attempters experienced higher levels of both generic life stressors (low self-esteem, substance use, victimization) and *LGB*- related stressors.

An altogether different mechanism may also explain the finding that, under conditions of victimization, flatter cortisol slopes are linked to depression whereas “normal” slopes are linked to suicidality. Suicidality is a disordered process that may, or may not lie on the same underlying psychiatric spectrum as depression. The assumption that suicide is simply the endpoint of untreated depression is wrong, especially when considering the differences between agitated and vegetative depression. Suicidal thoughts and attempts are characterized by anger and impulsivity (Braquehais et al., 2009). As reviewed earlier in this study, some stress related disorders, such as PTSD, may be accompanied by cortisol hypoactivity rather than hyperactivity (Fries et al., 2005). It may be possible then that highly negative cortisol slopes are indicative of cortisol under-production, or some other dysregulation of the HPA axis

and that this hypoactivity is linked to a separate, as yet not-understood, psycho-biological process underlying impulses towards suicide (van Heeringen, 2003)

Limitations

Cross sectional sampling. Several methodological limitations are worthy of note. This initial investigation into the role of stress physiology in the well-being of LGB young adults was a cross-sectional, correlational, study of a relatively small and select group of individuals. As such, it is not possible to determine whether there are causal relations among the variables assessed. It is possible that IH or HPA dysregulation preceded, or even induced, the experiences of LGB-related stress, and psychological distress. Use of a cross-sectional design makes it impossible to make inferences regarding the direction of influence. It was hypothesized, for example, that perceived social support from friends and family would contribute to well-being; however, it is possible that what were viewed as outcome variables (i.e., depression, anxiety, suicide, IH and cortisol) actually influenced perceptions of, for instance, social support or LGB-related stress. For example, individuals who internalize the belief that their sexual-orientation is morally reprehensible may be more likely to believe that others are rejecting them for their sexual orientation, regardless of the accuracy of that perception and individuals who are depressed, may be more likely to isolate themselves and report less social-support (Sheets & Mohr, 2009), .

Power and sample size. The large number of correlational and regression analyses relative to sample size performed in this study greatly increases the chance of Type 1 error. This study's relatively small sample size with respect to the number of factors explored, may not have provided sufficient power to detect complex effects such as mediation. However, although the sample size in this study is somewhat lower than recent studies examining stress

in LGB (Rosario 2002), there have been no other studies of cortisol in LGB young adults, and as such, this study can be considered exploratory.

Self Report. This study was also limited by shared method variance, in that all measures except salivary cortisol were self-report questionnaires. It is unclear whether this bias may have inflated or deflated the associations amongst variables in this study.

The reliability of multiply self-administered saliva samples can also be called into question, especially since sampling time was also self-reported. It is possible that some participants in this study were not fully compliant with systematic sampling at every 2 hours, even though they reported being so. Self-report of compliance in a salivary cortisol sampling protocol substantially overestimates actual compliance in the absence of objective monitoring. Non-compliance with the sampling protocol results in cortisol data that significantly differs from compliant data (Broderick et al., 2003). Digitally time-stamped sampling vials would have provided more reliable results, but were not used in this study due to their prohibitive cost and funding limitations. Also, many recent studies of diurnal cortisol have recommended sampling over two or more days, in order to increase validity and reliability of the measurements. Cortisol levels are extremely sensitive to variations in minor stressors and physiological functions such as hunger and feeding, throughout the day. Although participants in this study were asked to report on such events, at every sampling, the reliability of these self reports is also unknown.

Psychosocial measures. The specific measures of parental support, and social support used in this study also leave areas for future improvements. As with most measures of general social support, the scale used in the present study provided no means of distinguishing heterosexual friend support from LGB friend support, or from distinguishing general social

support from sexuality-specific support / acceptance. Future research would benefit from the use of scales that permit researchers to differentiate these sources of support.

Lack of exploration of Gender Effects. As mentioned earlier in this text, LGB individuals are an exceedingly diverse community, comprised of different gender and orientation subgroups that may be exposed to different stressors and that evidence different mental health challenges. However, in designing this study, a decision to maximize power was made, such that potential differences in the relations between variables that might have existed for men and women, and for homosexual and bisexual individuals, were not examined. Future research should assess the extent to which gender and sexual orientation moderate the links between stress/support factors, cognitive and physiological factors, and mental health.

Sample Characteristics, representativeness and generalizability. One should also emphasize that the sample was not representative of all LGB young adults. Most of the sample consisted of college-educated, Caucasian individuals who had some level of affiliation with the LGB community. Because recruitment occurred in LGB-identified organizations, most of the participants in this sample were out to at least some of their friends or family members. Thus, those who presumably suffer most from IH, and stress due to fear of disclosure, were not assessed in this study. Arguably, these individuals may represent the understudied group that is most at risk. Furthermore, the LGB-related stress scale used in this study was intended to measure stressful interactions in individuals who had already disclosed their sexual orientations to friends and family. The stress engendered by hiding one's identity and the fear of one's sexual orientation being discovered were not measured in this index. Therefore, this study may have underestimated the amount of stress experienced by the LGB young adults in this sample. More accurate and global scales of LGB-related stress could reveal stronger, or

different, associations with physiological and psychological well-being. In fact, the extent to which samples are representative and findings are generalizable are limitations of most studies of LGB individuals. There exists an invisible group of individuals who are virtually impossible to recruit because they do not affiliate with other LGB individuals or do so in a covert manner. That said, it may also be the case that those who do disclose their sexual orientation are more likely to be victimized by peers. LGB young adults who vary in their levels of LGB identity disclosure may experience different sets of stressors, and different mental health effects.

Generalizability and representativeness of these results is also limited by rapidly changing cohort effects in LGB youth (Savin-Williams 2005). This study reports on measures collected in 2003 in Montreal, Canada. Some would argue that since that time, acceptance of LGB youth and young adults has improved in school settings, and that these youth see their identities reflected more often in a positive light in popular media. Same sex marriage was also legalized in 2005, further normalizing the LGB identity and integrating LGB individuals into mainstream society. Thus it is unclear if these same effects would be found in a more recent sampling, but this author suggests that the effects would hold true given the high rates of victimization still present in school settings, and the heterosexist attitudes still prevalent at all levels of society. That said, with respect to the cohort that was sampled, even though the current trend is towards increased acceptance, the damaging effects of past victimization have a lifelong impact on those affected.

Due to the relative dearth of research into emerging adulthood in general and in LGB in particular, this study lumped both adolescents and young adults in one group. The mean age in this sample was 21.3 , with a SD of 2.6. Stress levels and victimization in this younger group may be different; perhaps more pronounced. It is known that suicide rates in LGB

adolescents are much higher than in their heterosexual counterparts (Bontempo & D'Augelli, 2002; Consolacion, Russell, & Sue, 2004). Another highly at-risk group that was not sampled in this study is that of LGB homeless youth and young adults. Studies have shown that 40-60% of homeless youth are LGB (Dame, 2004) and that most of them ran away from home because of family rejection, hostility and victimization related to their LGB identity. Psychological distress, HIV and drug-risk behavior, and medical problems plague this vulnerable population. Overcoming the difficulty of accessing and working with LGB individuals who are not yet "out," who are still struggling with their identity and who fear disclosure, or who are homeless will be a vitally important component of future research, as they may well be the LGB individuals who are suffering most from IH. Identifying them and understanding their experiences will be essential for advancing the health and well-being of all LGB individuals.

Implications

The results of this study have shown that LGB-related stress, victimization, and support structures are linked, in separate ways to both internalized homonegativity and HPA dysregulation and mental health. LGB young adults who experienced higher incidences of stressful interpersonal events due to their sexual orientation also manifested adverse reactions to these stressors at both the psychological and physiological level. Furthermore, it appears that these indices of physiological and psychological stress responses are not redundant, and can appear independently of one another. That is, the absence of a significant relation between IH and diurnal cortisol slope indicated that although some LGB young adults may not have consciously been aware of, or reported, negative feelings about their sexual identity, they still

may have manifested the physiological impacts of LGB-related stress, as evidenced through disrupted diurnal cortisol and its link to depression and suicide.

From a LGB-health perspective, therefore, it is noteworthy that this study has shown that stressors that are unique to the experience of LGB individuals - negative life events stemming from their stigmatized status – may undermine their mental health through both psychological and physiological mechanisms. Furthermore, it was shown that HPA dysregulation, as reflected in flatter diurnal cortisol curves, moderated the associations between LGB-related stressors and depression. It was only in the individuals who exhibited flatter cortisol profiles that gay-related stress was linked to depression. As such, there are multiple, additive pathways that may confer a diathesis to the eventual development of mental health problems in this population, and each can be targeted for treatment and prevention.

The interplay between LGB-related stress, diurnal cortisol curves, and mental health has implications for the physical and psychological well-being of LGB young adults. As reviewed earlier, the chronic physiological strain of elevated circulating cortisol levels depletes the body's resources, breaks down tissues, and undermines such primary systems as sleep, appetite and immune functioning (Dallman et al., 2000). Cortisol dysregulation has also been linked to vulnerability to disease through viral infections, including HIV and other sexually transmitted infections (Leserman, 2003). Thus, the extent to which negative societal attitudes toward homosexuality are perpetuated and result in discriminatory actions against sexual minority members has serious and pervasive health implications, with higher incidence of both mental and physical health problems being present in victimized LGB young adults. Antidepressant treatment and stress reduction training have been shown to reduce levels of circulating cortisol (Himmerich et al, 2007; Weigensberg et al., 2009). The results of this study

call for further research into the potential benefits of incorporating these two techniques into LGB-affirmative psychotherapy.

This study also shed some light on factors that may contribute some level of resilience against the impact of LGB-related stress and victimization. Social support and parental support were both shown to offer some protection against psychological distress in individuals who suffer from internalized homonegativity. This has implications at both clinical and programmatic or policy levels. The protective effect of parental support underscores the importance of family-level interventions for LGB youth who suffer from psychological distress. High-school and college programs such as Gay-Straight Alliance and other educational programs to fight homophobia and bullying in academic settings may increase peer social support and acceptance and protect against psychological distress in LGB youth and young adults. Particular success has been documented in Quebec with GRIS-Montreal (Groupe de Recherche en Intervention Sociale), a non-profit organization, consisting of educators, community members, and students that advocate for eradicating homophobia in schools and present volunteer-facilitated, competency-based workshops focusing on demystifying homosexuality and curtailing homophobia to high-school students, teachers and parents.

This study supports Matteson's (1996) notion that counselors can help their sexual minority clients develop a positive sexual and self-identity by encouraging them to form relationships with individuals who are accepting of diverse sexual orientations. Sheets and Mohr (2009) suggest that, concurrently, initiatives designed to help students develop a positive LGB-identity may contribute to them gaining the motivation and confidence necessary to seek increased levels of acceptance among friends and family. Regardless of the direction of

influence, the present study suggests that counselors working with LGB client may benefit from paying clinical attention to the possible interplay between self-acceptance and acceptance from others.

The fact that internalized homonegativity was linked to mental health and was a moderator between psycho-social support structures and psychological distress indicates that interventions that target IH directly may be of benefit in clinical settings. This could take the form of psycho-education about IH and therapeutically challenging common faulty beliefs about LGB identity in those presenting for treatment. Preventatively, these types of psycho-educational techniques could also be developed into a brief, informal training that could be presented to LGB student groups and other LGB youth organizations, with the provision that IH, itself, not be pathologized.

What is particularly striking, and alarming, is that these relations among physiological, psychological and social variables related to mental health were found despite the fact that this group of LGB young adults reported fairly low levels of LGB-related stress, or victimization. The participants in this study lived in a relatively tolerant and accepting urban environment, and had experienced relatively few incidences of victimization and other LGB-related stressful events in the preceding three months, were mostly LGB-identified and “out”, and were well connected to LGB support groups. Thus, the adverse impact of stressors on well-being does not appear to require over-whelming or constant barrages against a person. It would appear that even rather infrequent or constrained experiences of direct discrimination can have deleterious psychological and physical consequences.

It is possible that, although few recent LGB-related stressors had been experienced, some of the young adults in this sample had endured more hardship during their earlier

adolescent years, when their sexual identities were attaining coherence. A diathesis may have been established from the enduring impacts of earlier chronic stress, perhaps through peer victimization or family rejection, on their physiological regulatory systems. Thus, when subsequent LGB-related stressors were encountered, these LGB young adults may have been more vulnerable to internalizing the events as evidence for their own diminished self-worth. Given that stressors, early in life, are known to have deleterious and pervasive effects that persist through adulthood (Heim & Nemeroff, 2001) school-based programs and policies that aim to normalize the LGB identity, and prevent homophobic bullying are likely to offer some level of protection against the development of mental health problems and risk behavior in this population. These programs should be implemented at the earliest acceptable developmental stage because victimization due to perceived sexual identity or gender nonconformity is a common occurrence even in elementary school children (Savin-Williams, 2004).

The results of this study also underline the importance of including LGB identities in developmental research into emerging adulthood (Arnett, 2005). Interactions between social-environmental factors and neurobiological mechanisms during this period set the stage for baseline levels of psychological functioning in adulthood (Schulenberg, 2004). Therefore, disruptions in physiological and psychological functioning due to LGB-related stressors may be a key component in conferring risk for mental health problems that persist throughout adulthood. These mechanisms should be further explored.

Public policy initiatives may also draw on bio-psycho-social studies such as this one, in order to support appeals for legislative changes calling for equal rights for LGB individuals. In essence, this study has shown that homophobic victimization, discrimination and LGB-stressors are hazardous to one's health. The province of Quebec has been at the forefront of

such policy initiatives, being one of the first in Canada to grant same-sex couples the right to marry, and adopting a governmental policy on eradicating homophobia (Department of Justice of Quebec, 2009). Moreover, studies have shown that low-self esteem and depressive symptoms are linked to sexual risk-taking that puts the individual at risk of contracting or transmitting HIV and other STDs (Gullette & Lyons, 2006; Reisner et al., 2009). Legislation that protects the rights of LGB individuals and prohibits discrimination against LGB individuals can then be seen, at the very least, as cost-effective, public-health prevention measures.

It is clear that in order to further elucidate the mechanisms that confer risk and protection in LGB youth, cross sectional studies are of limited benefit. Initiating longitudinal studies to track the development of LGB individuals' health, adjustment, physiology and stress could begin to address the nature of these complex interactions. Future studies should also make every attempt to recruit samples that are more representative of the LGB young adult population, which includes non-disclosers, and homeless LGB youth.

Conclusion

This study was a novel exploration of psycho-social and endocrine factors that may contribute to mental health in LGB youth and young adults - an underserved, at risk, and vulnerable population. This is the first and only study of diurnal cortisol activity in a LGB sample, and, to the best of this author's knowledge, the only one to have examined putative biological vulnerabilities to stress in LGB youth. From a basic science perspective, this study has added to the evidence that psycho-social stress is related to disturbances in endocrine functioning that confers risk to mental health problems and physical disease. Bio-psycho-social studies such as this one lend credence to existing evidence that external stressors such as

victimization, lack of support, and discrimination based on minority status have deleterious effects on physical and mental health. By extension, this study has also shed some light on how many, if not most, LGB individuals show resilience in the face of social adversity, and provides additional arguments for the importance of social and familial support to provide validation and buffer against the effects of stress. Given that certain forms of discrimination against LGB individuals is still legislated within most countries, and LGB youth still suffer from socially accepted homophobic, often violent, and sometimes lethal, victimization in school settings, evidence of the actual harm caused by such actions, such as that presented in this study, may serve to strengthen public policy initiatives seeking to provide equal rights and protection to this minority group, and inform programs seeking to eliminate homophobia at the community level. An additional financial argument to policy-makers can also be made for the cost savings involved in preventing mental health problems in minority populations through public education and legislative changes. Due, perhaps, to institutionalized biases of the medical model, studies that provide biological evidence to policy-makers tend to be more convincing than those presenting arguments based solely on psychosocial findings. This study also sheds some light on the mechanisms by which external stressors are internalized at psychological and physiological levels, and as such, can provide targets of intervention in clinical work, by focusing on the maintenance and establishment of positive relationships with peer and familial networks, in addition to stress reduction training for HPA-normalization, as essential components of individual counseling.

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Appendix

(The following pages list the questionnaires used in this study. The version presented is for Anglophone , Males)

Demographics

Date of Birth _____

Your age: _____ Your sex: _____

Your ethnic origins are: _____

Your mother tongue is: _____

Your religion is : _____

Religion is for you:

- a) Not at all important
- b) A little important
- c) Important
- d) Very important

Your current relationship status is:

- a) Single, not actively dating
- b) Single, actively dating
- c) In a non-monogamous same-sex relationship
- d) In a non-monogamous opposite-sex relationship
- e) In a monogamous same- sex relationship
- f) In a monogamous opposite-sex relationship
- g) Other: _____

You have been in this situation (relationship status) for:

- a) less than six months
- b) 6-12 months
- c) 1-2 years
- d) more than 2 years

You were born in:

- a) North America
- b) South or Central America
- c) Europe
- d) Asia
- e) Africa
- d) Australia

You live in a(n):

- a) Urban area
- b) Suburban area
- c) Small or mid-sized city
- d) Village or rural area

The province you live in is: _____

Currently you live with:

- a) Alone
- b) Your partner
- c) Your partner and children
- d) Your children
- e) Your family of origin
- f) Your roommate
- g) In a group home, foster family, shelter or other community facility

The highest level of education that you have completed is:

- a) Grade school
- b) High school
- c) CEGEP, trade school, private commercial college or technical institute
- d) Some university courses
- e) Bachelor's degree
- f) Doctorate
- g) Post-Doctorate

Your current work situation

- a) Employed or Self-employed
- b) Student
- c) Unemployed
- d) Permanently unable to work
- e) Homemaker
- f) On medical leave of absence
- g) On non-medical leave of absence

Your total gross personal income (before taxes) in the last year:

(If you live with your parents, please report your estimated household income)

- a) 0 - 5 999\$
- b) 6 000 - 11 999\$
- c) 12 000 - 19 999\$
- d) 20 000 - 29 999\$
- e) 30 000 - 39 999\$
- f) 40 000 - 49 999\$
- g) 50 000 - 59 999\$
- h) 60 000 - 79 999\$
- i) 80 000 - 119 999\$
- j) Over 120 000\$

Please list any medication or nutritional supplements you are currently taking.

Sexual Orientation

The following section deals with your sexuality, in terms of attractions, fantasies, behaviour and identity. Please circle the response that is most accurate for you.

1-Currently your sexual/emotional attractions and fantasies are:

- 0- Exclusively heterosexual
- 1- Predominantly heterosexual, only slightly homosexual
- 2- Predominantly heterosexual, but significantly homosexual
- 3- Equally homosexual and hetero- sexual
- 4- Predominantly homosexual, but significantly heterosexual
- 5- Predominantly homosexual, only slightly heterosexual
- 6- Exclusively homosexual

2-Currently your sexual activities are:

- 0- Exclusively heterosexual
- 1- Predominantly heterosexual, only slightly homosexual
- 2- Predominantly heterosexual, but significantly homosexual
- 3- Equally homosexual and hetero sexual
- 4- Predominantly homosexual, but significantly heterosexual
- 5- Predominantly homosexual, only slightly heterosexual
- 6- Exclusively homosexual
- 7- No current sexual activities.

3-Currently you consider yourself to be:

- 0- Exclusively heterosexual
- 1- Predominantly heterosexual, only slightly homosexual
- 2- Predominantly heterosexual, but significantly homosexual
- 3- Equally homosexual and hetero sexual
- 4- Predominantly homosexual, but significantly heterosexual
- 5- Predominantly homosexual, only slightly heterosexual
- 6- Exclusively homosexual

If you answered 0- Exclusively heterosexual to all three previous questions, you have now completed this survey.

If you have answered 1 - 6 on ANY of the three preceding questions, please continue. The next two sections will ask about your experiences and attitudes about sexuality

Sexual Orientation Development

The following series of questions are aimed at describing the timing of different experiences, thoughts and feelings in relation to your sexual identity formation. Because people may have different preferred terms to indicate same-sex sexual orientation (lesbian, dyke, fag, queer...) the word homosexual is used here for simplicity and should be taken to encompass all these terms. Likewise, bisexual includes any significant amounts of both same-sex and opposite sex eroticism. Please answer each question by giving a specific age (in years) or circling 'never' if what is described has never applied to you. If you are unsure of the exact age, please choose the one age which is your best guess rather than writing a range

1- At what age did you first feel different from your peers BECAUSE OF homosexual thoughts or feelings?

_____ years old never

2- At what age did you first consider that you may not be exclusively heterosexual?

_____ years old never

3- At what age did you first consider that you were probably homosexual/bisexual?

_____ years old never

4- At what age did you consider that you were definitely homosexual/ bisexual?

_____ years old never

5- How old were you when you first began to socialize with a self-identified homosexual/bisexual person?

_____ years old never

6- How old were you when you began to have a significant proportion of self-identified homosexual people in your social circle?

_____ years old never

7- Currently you socialize with (please circle the ONE most appropriate):

- a) No homosexual/bisexual people
- b) One or very few homosexual/ bisexual people
- c) Some homosexual/bisexual people
- d) Many homosexual/bisexual people
- e) Most or only homosexual/bisexual people

8- How old were you when you disclosed your homosexuality to:

a) A gay friend: _____ n/a never

b) A straight friend: _____ n/a never

- c) Your mother: _____ n/a never
- d) Your father: _____ n/a never
- e) A sister: _____ n/a never
- f) A brother: _____ n/a never
- g) One of your children: _____ n/a never
- h) A member of your extended family _____ n/a never
- i) A co-worker: _____ n/a never
- j) A boss or superior or person in a position of authority: _____ n/a never

9- At what age did you first feel that the majority of significant people (family, friends, co-workers, etc.) in your life knew you were homosexual/bisexual?

_____ years old never

10- Currently you are out to (please choose the ONE most appropriate):

- a) No one
- b) Very few people
- c) some friends, family and/or co-workers
- d) Many significant people in your life
- e) Most or all the significant people in your life

11- Currently you feel about your homosexuality/bisexuality (please choose the ONE most appropriate):

- a) Very negatively
- b) Negatively
- c) Some times negatively, sometimes positively
- d) Positively
- e) Very positively

12- How old were you when you experienced your first same-sex romantic relationship?

_____ years old Never

The next three questions refer to the attitude of your current environment towards homosexuality

13- In your family, homosexuality is (please choose the best group of descriptors):

- a) Ridiculed, stigmatized, discriminated
- b) Tolerated
- c) Accepted, respected
- d) Celebrated, appreciated

14- In your social circle, homosexuality is (please choose the best group of descriptors):

- a) Ridiculed, stigmatized, discriminated
- b) Tolerated
- c) Accepted, respected
- d) Celebrated, appreciated

15- In your work environment, homosexuality is (please choose the best group of descriptors):

- a) Ridiculed, stigmatized, discriminated
- b) Tolerated
- c) Accepted, respected
- d) Celebrated, appreciated

(Beck Anxiety Inventory)

Next you will find a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by each symptom during the **PAST WEEK, INCLUDING TODAY**, by circling the appropriate number in the column next to each symptom.

0 = Not at all,

1 = Mildly (it didn't bother me much),

2 = Moderately (it was very unpleasant but I could stand it),

3 = Severely (I could barely stand it)

1- Numbness or tingling	0	1	2	3
2- Feeling hot	0	1	2	3
3- Wobbliness in legs	0	1	2	3
4- Unable to relax	0	1	2	3
5- Fear of the worst happening	0	1	2	3
6- Dizzy or lightheaded	0	1	2	3

7- Heart pounding or racing	0	1	2	3
8- Unsteady	0	1	2	3
9- Terrified	0	1	2	3
10- Nervous	0	1	2	3
11- Feelings of choking	0	1	2	3
12- Hands trembling	0	1	2	3
13- Shaky	0	1	2	3
14- Fear of losing control	0	1	2	3
15- Difficulty breathing	0	1	2	3
16- Fear of dying	0	1	2	3
17- Scared	0	1	2	3
18- Indigestion or discomfort in abdomen	0	1	2	3
19- Faint	0	1	2	3
20- Face flushed	0	1	2	3
21- Sweating (not due to heat)	0	1	2	3

(Beck Depression Inventory)

The following section consists of 21 groups of statements. After reading each group of statements carefully, circle the number next to the one statement in each group which **BEST** describes the way you have been feeling in the past week, including today. If several statements within a group seem to apply equally well, circle each one. **Be sure to read all the statements in each group before making your choice.**

1-

- 0- I do not feel sad
- 1- I feel sad
- 2- I am sad all the time and I can't snap out of it.
- 3- I am so sad or unhappy that I can't stand it.

2-

- 0- I am not particularly discouraged about the future.
- 1- I feel discouraged about the future.
- 2- I feel I have nothing to look forward to.
- 3- I feel that the future is hopeless and that things cannot improve

3-

- 0- I do not feel like a failure.
- 1- I feel I have failed more than the average person.
- 2- As I look back upon my life, all I can see is a lot of failures.
- 3- I feel I am a complete failure as a person.

4

- 0 - I get as much satisfaction out of things as I used to.
- 1- I don't enjoy things the way I used to.
- 2- I don't get real satisfaction out of anything anymore.
- 3- I am dissatisfied or bored with everything.

5-

- 0- I don't feel particularly guilty
- 1- I feel guilty a good part of the time
- 2- I feel quite guilty most of the time
- 3- I feel guilty all the time

6-

- 0- I don't feel I am being punished
- 1- I feel I may be punished
- 2- I expect to be punished
- 3- I feel I am being punished

7-

- 0- I don't feel disappointed in myself
- 1- I am disappointed in myself
- 2- I am disgusted with myself
- 3- I hate myself

8-

- 0- I don't feel I am any worse than anybody else
- 1- I am critical of myself for my weaknesses or mistakes
- 2- I blame myself all the time for my faults
- 3- I blame myself for everything bad that happens

9-

- 0- I don't have any thoughts of killing myself
- 1- I have thought of killing myself, but I would not carry them out
- 2- I would like to kill myself
- 3- I would kill myself if I had the chance

10-

- 0- I don't cry any more than usual
- 1- I cry more than I used to
- 2- I cry all the time now
- 3- I used to be able to cry, but now I can't cry even though I want to

11-

- 0- I am no more irritated now than I ever am
- 1- I get annoyed or irritated more easily than I used to
- 2- I feel irritated all the time now
- 3- I don't get irritated at all by things that used to irritate me

12-

- 0- I have not lost interest in other people
- 1- I am less interested in other people than I used to be
- 2- I have lost most of my interest in other people
- 3- I have lost all of my interest in other people

13-

- 0- I make decisions about as well as I ever could
- 1- I put off making decisions more than I used to
- 2- I have greater difficulty making decisions than before
- 3- I can't make decisions anymore.

14-

- 0- I don't feel any worse than I used to
- 1- I am worried that I am looking old or unattractive
- 2- I feel that there are permanent changes in my appearance that make me look unattractive
- 3- I believe I look ugly

15-

- 0- I can work about as well as before
- 1- It takes an extra effort to get started at doing something
- 2- I have to push myself very hard to do anything
- 3- I can't do any work at all

16-

- 0- I can sleep as well as usual
- 1- I don't sleep as well as I used to
- 2- I wake up 1-2 hours earlier than usual and I find it hard to get back to sleep
- 3- I wake up several hours earlier than I used to and I cannot get back to sleep

17-

- 0- I don't get more tired than usual
- 1- I get tired more easily than I used to
- 2- I get tired from doing almost anything
- 3- I am too tired to do anything

18-

- 0- My appetite is no worse than usual
- 1- My appetite is not as good as it used to be
- 2- My appetite is much worse now
- 3- I have no appetite at all anymore

19-

- 0- I haven't lost much weight, if any, lately
- 1- I have lost more than 5 pounds
- 2- I have lost more than 10 pounds
- 3- I have lost more than 15 pounds

I am purposely trying to lose weight
by eating less. Yes _____ No _____

20-

0- I am no more worried about my health than usual

1- I am worried about physical problems such as aches and pains, or upset stomach, or constipation

2- I am very worried about physical problems and it is hard to think of much else

3- I am so worried about my physical problems that I cannot think about anything else

21-

0- I have not noticed any recent change in my interest in sex

1- I am less interested in sex than I used to be

2- I am much less interested in sex now

3- I have lost interest in sex completely

(Suicidality)

Please circle the answer that is correct for you

1- In the *past week*, have you had the wish to die? 0) No 1) Yes

2- In the *past week*, have you thought about killing yourself? 0) No 1) Yes

3- In the *past week*, have you planned to kill yourself? 0) No 1) Yes

4- In the *past week*, have you attempted to kill yourself? 0) No 1) Yes

5- In your *lifetime*, have you ever thought about killing yourself? 0) No 1) Yes

at what age was the last time? _____

6- In your *lifetime*, have you ever attempted to kill yourself? 0) No 1) Yes

at what age(s) ? _____

(Internalized Homonegativity)

In the following section you will find a number of attitude statements that are personal and intimate in nature. These statements pertain to sexual behavior and sexuality. Specifically, the statements fall into 3 categories: 1) attitudes towards the fact of one's own homosexuality, 2) attitudes towards homosexual men or women in general and 3) attitudes towards other people knowing of your own sexual/affectional preference.

No two statements are alike, so consider each statement carefully before responding. We would like you to use these statements in order to describe your own beliefs and attitudes. That is, we would like you to indicate, on a scale from 'strongly disagree' to 'strongly agree', how much you personally endorse each statement. Please do not leave any statement unmarked. Some statements may depict situations that you have not experienced; please imagine yourself in those situations when answering those statements. It is important that you answer as frankly and honestly as you can. Your answers will be kept in the strictest confidence.

1- When I am in a conversation with a lesbian and she touches me, it *does not* make me uncomfortable.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

2- I would *not mind* if my boss or teacher found out that I was lesbian/gay.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

3- Whenever I think a lot about being homosexual, I feel depressed.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

4-Homosexuality is *not* as good as heterosexuality.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

5- When I tell my nongay friends about my homosexuality, I do *not* worry that they will try to remember things about me that would make me fit the stereotype of a lesbian.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

6- I am glad to be lesbian/gay.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

7- Female homosexuality is a natural expression of sexuality in human females.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

8- When I am sexually attracted to a close female friend, I feel uncomfortable.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

9- I am proud to be part of the gay community.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

10- Male homosexuals do not dislike women any more than heterosexual males dislike women.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

11- Marriage between two homosexuals should be legalized.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

12- My homosexuality does not make me unhappy.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

13- Male homosexuals are overly promiscuous.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

14- When I am sexually attracted to another gay man, I do not mind if someone else knows how I feel.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

15- Most problems that homosexuals have, come from their status as an oppressed minority, not from their homosexuality per se.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

16- When women know of my homosexuality, I am afraid they will not relate to me as a man.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

17- Homosexual lifestyles are not as fulfilling as heterosexual lifestyles.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

18- I would not mind if my neighbors knew that I am gay.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

19- It is important for me to conceal the fact that I am gay from most people.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

20- Whenever I think a lot about being homosexual, I feel critical about myself.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

21- Choosing an adult gay lifestyle should be an option for children.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

22- If my straight friends knew of my homosexuality, I would be uncomfortable.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

23 - If men knew of my homosexuality, I am afraid they would begin to avoid me.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

24- Homosexuality is a sexual perversion.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

25- If it were made public that I am a homosexual, I would be extremely unhappy.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

26- If my peers knew of my homosexuality, I am afraid that many would not want to be my friends.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

27- If others knew of my homosexuality, I would not be afraid that they would see me as being effeminate.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

28- I wish I were heterosexual.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

29- When I think about coming out to peers, I am afraid they will pay more attention to my body movements and voice inflection.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

30- I do not think that I will be able to have a long term love relationship with another man.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

31- I am confident that my homosexuality does not make me inferior.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

32- I am afraid that people will harass me if I come out more publicly.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

33- When I think about coming out to a heterosexual male friend, I do not worry that he might watch to see if I do things that are stereotypically homosexual.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

34- I wouldn't mind if my boss/teacher knew I was gay.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

35- I have been in counseling because I wanted to stop having sexual feelings for other men.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

36- I have tried killing myself because I couldn't accept my homosexuality.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

37- There have been times when I've felt so rotten about being gay that I wanted to be dead.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

38- I have tried killing myself because it seemed that my life as a gay person was too miserable to bear.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

39- I find it important that I read gay books or newspapers.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

40- It's important to me to feel part of the gay community.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

(Victimization)

The following questions pertain to various kinds of victimization that people sometimes experience.

1- On a scale from 1 to 9, 1 being 'extremely feminine' and 9 being 'extremely masculine', please indicate which point in the scale corresponds to your own outward appearance.

Extremely Feminine

Extremely Masculine

1 2 3 4 5 6 7 8 9

2- Please indicate in the space provided the number of times you have been subject to the following forms of violence, because the aggressor either knew or assumed you were homosexual or bisexual. For each question circle only one response from the following choices:

(1) Never; (2) One time; (3) Twice; (4) Three or more times

a) Aggression by family members	never	once	twice	three+
1. verbal insults	1	2	3	4
2. threats of physical violence	1	2	3	4
3. destruction or damage to your belongings	1	2	3	4
4. being followed or chased	1	2	3	4
5. being spit on	1	2	3	4

	never	once	twice	three+
6. having objects thrown at you	1	2	3	4
7. being hit, kicked or beaten	1	2	3	4
8. sexual assault	1	2	3	4
9. threatened with a weapon	1	2	3	4

b) Aggression by people other than family members:

1. verbal insults	1	2	3	4
2. threats of physical violence	1	2	3	4
3. destruction or damage to your belongings	1	2	3	4
4. being followed or chased	1	2	3	4
5. being spit on	1	2	3	4
6. having objects thrown at you	1	2	3	4
7. being hit, kicked or beaten	1	2	3	4
8. sexual assault	1	2	3	4
9. threatened with a weapon	1	2	3	4

(Social Support)

Most relationships with people we feel close to are both helpful and stressful. Below are statements that describe close personal relationships. Please read each statement and circle the answer that best fits your situation. There are no right or wrong answers.

THESE FIRST STATEMENTS ASK YOU TO DISAGREE OR AGREE

1- I know someone who makes me feel confident in myself

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

2- within my circle of friends, I get just as much as I give

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

3- Some people I care about share similar views with me

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

4- I'm available to my friends when they need to talk

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

5- When I have helpful information, I try to pass it on to someone who could use it.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

6- I think I put more effort into my friends than they put into me

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

7- There is someone I can turn to for helpful advice about a problem

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

8- I don't mind loaning money if a person I care about needs it.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

9- I can talk openly about anything with at least one person I care about.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

10- I'm satisfied with the give and take between me and people I care about.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

11- There is someone I could go to for anything

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

12- Some people in my life are too pushy

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

13- I'm happy with the balance of how much I do for others and how much they do for me.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

14- I can count on a friend to make me feel better when I need it

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

15- When I need help, I get it from my friends, and when they need help, I give it back.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

16- There is someone in my life who gets mad if we have different opinions

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

17- It's safe for me to reveal in my weaknesses to someone I know

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

18- Someone I care about stands by me through good times and bad times.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

19- I have the kind of neighbors who really help out in an emergency

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

20- There is someone I care about that I *can't* count on

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

21- If I need help, all I have to do is ask.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

22- I have enough opportunity to talk things over with people I care about.

- 1 strongly disagree
- 2 disagree
- 3 neutral
- 4 agree
- 5 strongly agree

These next statements ask you *how often* something happens

23- I have enjoyable times with people I care about

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

24- I spend time doing things for others when I'd really rather not

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

25- Some people I care about invade my privacy

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

26- I let people I care about know that I appreciate them

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

27- I am embarrassed by what someone I care about does.

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

28- Some people come to me for a boost in their spirits

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

29- Someone I care about tends to take advantage of me

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

30- Some people I care about are a burden to me

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

31- I tell others when I think they're great

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

32- I wish some people I care about were more sensitive to my needs

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

33- People I care about make me do things I don't want to do

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

34- Some people I care about come to me for advice

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

35- There is tension between me and someone I care about

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

36- I have trouble pleasing some people I care about

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

37-- At least one person I care about lets me know they believe in me

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

38- Some people I feel close to expect too much of me

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

39- I let others know I care about them.

- 1 never
- 2 almost never
- 3 sometimes
- 4 fairly often
- 5 very often

(Self Esteem)

For each of the following items, please indicate how the item applies to you by circling the appropriate number.

1- I feel that I am a person of worth, at least on an equal plane with others

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree

2- All in all, I am inclined to feel that I am a failure

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree

3- I am able to do things as well as most other people

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree

4- I feel I do not have much to be proud of

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree

5- I take a positive attitude toward myself

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree

6- I wish I could have more respect for myself

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree

7- I certainly feel useless at times

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree

8- I feel that I have a number of good qualities

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree

9- At times I think I am no good at all

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree

10- On the whole, I am satisfied with myself

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree

(Parental Support)

These questions ask about your relationships with your parents.

1) Your Mom (or Stepmom), 2) your Dad (or Stepdad).

If you have two homes, answer the items as they pertain to the parents you spend the most time with.

1= Little or none, 2= Somewhat, 3= Very much, 4= Extremely 5= The most

1- How much free time do you spend with this person?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

2- How much do you and this person get upset with or mad at each other?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

3- How much does this person teach you how to do things that you don't know?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

4- How much do you and this person get on each other's nerves?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

5- How much do you talk to this person about everything?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

6- How much do you help this person with things he/she can't do by him/herself?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

7- How much does this person like or love you?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

8- How much does this person treat you like you're admired and respected?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

9- Who tells the other person what to do more often, you or this person?

1= She/He almost always does, 2= She/He often does, 3= About the same, 4= I often do, 5= I almost always do.

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

1= Little or none, 2= Somewhat, 3= Very much, 4= Extremely 5= The most

10- How sure are you that this relationship will last no matter what?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

11- How much do you play around and have fun with this person?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

2- How much do you and this person disagree and quarrel?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

13- How much does this person help you figure out or fix things?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

14- How much do you and this person get annoyed with each other's behavior?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

15- How much do you share your secrets and private feelings with this person?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

16- How much do you protect and look out for this person?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

17- How much does this person really care about you?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

18- How much does this person treat you like you're good at many things?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

19- Between you and this person, who tends to be the BOSS in this relationship?

1= She/He almost always does, 2= She/He often does, 3= About the same, 4= I often do, 5= I almost always do.

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

1= Little or none, 2= Somewhat, 3= Very much, 4= Extremely 5= The most

20- How sure are you that your relationship will last in spite of fights?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

21- How often do you go places and do enjoyable things with this person?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

22- How much do you and this person argue with each other?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

23- How often does this person help you when you need to get something done?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

24- How much do you and this person hassle or nag one another?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

1= Little or none, 2= Somewhat, 3= Very much, 4= Extremely 5= The most

25 - How much do you talk to this person about things that you don't want others to know?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

26- How much do you take care of this person?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

27- How much does this person have a strong feeling of affection (love or liking) toward you?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

28- How much does this person like or approve of the things you do ?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

29- In your relationship with this person, who tends to take charge and decide what should be done?

1= She/He almost always does, 2= She/He often does, 3= About the same, 4= I often do, 5= I almost always do.

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

1= Little or none, 2= Somewhat, 3= Very much, 4= Extremely 5= The most

30- How sure are you that your relationship will continue in years to come?

Mom/Stepmom	1	2	3	4	5
-------------	---	---	---	---	---

Dad/Stepdad	1	2	3	4	5
-------------	---	---	---	---	---

(LGB-Related Stress)

The following 12 questions are a list of things that happen to people. Please read each question and answer 'YES' if the event has happened to you *within the last three months*, or 'NO' if the event has not happened to you within the last three months.

1- Increased number of arguments between your parents about your homosexuality/bisexuality.

1) YES 0) NO

2- Increased trouble with your brother or sister about your homosexuality/bisexuality.

1) YES 0) NO

3- Increased number of arguments with your parents about your homosexuality/bisexuality.

1) YES 0) NO

4- Increased number of arguments with other family members about your homosexuality/bisexuality.

1) YES 0) NO

5- Trouble with your teacher over your homosexuality/bisexuality.

1) YES 0) NO

6- Trouble with your classmates over your homosexuality/bisexuality.

1) YES 0) NO

7- Losing a close friend because of your homosexuality/bisexuality.

1) YES 0) NO

8- Increased number of arguments with a close friend over your homosexuality/bisexuality.

1) YES 0) NO

9- Trouble with your boss or supervisor over your homosexuality/bisexuality.

1) YES 0) NO

10- Trouble with your workmates over your homosexuality/bisexuality.

1) YES 0) NO

11- Getting in trouble with the police because of your homosexuality/bisexuality.

1) YES 0) NO

12- Being physically assaulted in a gay-bashing incident.

1) YES 0) NO

CONSENT FORM TO PARTICIPATE IN RESEARCH

Concordia University Stress and Well-Being Project

Michael Benibgui, M.A. - Concordia University, Paul D. Hastings, PhD. – Concordia University,

Note: Before deciding to participate in the study, you should clearly understand its requirements, risks and benefits. This document provides information about the study, and it may contain words you do not fully understand. Please read it carefully and ask the study staff any questions you may have. They will discuss the study with you in detail. You may take this form with you and discuss the study with anyone else before making your decision. If you decide to participate, you will be asked to sign this form and a copy will be given to you.

You are being asked to participate in a program of research being conducted by Michael Benibgui, M.A., Gala Wilkie (research assistant), and Dr. Paul D. Hastings, Ph. D., of the Department of Psychology at Concordia University. The purpose of the research is to examine the physiological, psychological and social correlates of well-being and mental health in sexual minority (gay, lesbian, bisexual) youths and young adults. To assist with this project, you will be completing several questionnaires and providing six saliva samples in one day, at two-hour intervals in the vials provided. The saliva samples will be used to measure levels of a stress hormone called *cortisol*. The questionnaires should take between 45 and 120 minutes to complete.

Risks: The questionnaire package includes questions that you may find troubling or that elicit strong emotions concerning your past, family, friends and loved ones. It is very unlikely that you will directly benefit from participating in this study. However, the data collected from this study would potentially benefit the development of therapeutic approaches with gay, lesbian and bisexual individuals. The results of this study may ultimately help to better understand the types of things that make young GLB individuals feel better about themselves, and perhaps encourage more funding for support and social groups, and programs aimed at eliminating homophobia in school and in families.

In all respects, your participation in this research will be confidential. That means that the researcher will not reveal your identity in any written or oral reports about this study. I will be assigned a coded number, and that number will be used on all materials collected in this study. Your name will not appear on any of these materials. Although your name will not be kept with the samples, other facts about you such as your age, sex, and ethnicity will be. This information is important should an incident arise where the research team need to contact you and this would allow them to. Only the main investigator or a delegate will be allowed to decode the data. All of the questionnaire data and biological samples collected in this study will be stored in a locked cabinet within secure facilities at Concordia University. The research data will be available only to the research team and to persons taking part in managing and analyzing the research information. Statistical analyses will be based on the entire group of the participants, such that the information provided by individuals will not be identifiable in any reports. In order to verify the research study data, one of the MUHC-Research Ethics Boards may

review the research files in order to verify compliance with institutional regulations concerning research.

Some of the questionnaires in this package ask about issues concerning health risks to an individual, including self-injury. An initial scoring of the questionnaires will be conducted after receipt of test materials. If health issues emerge from your responses, the principal investigator will (with your permission) contact you by your preferred method (phone or email) in order to discuss the possibility of obtaining assistance to help you deal with these kinds of risks. (If you would rather not be contacted about these kinds of health issues, please indicate this preference in the space provided below.)

Although you are not being offered direct reimbursement for this study, your name will be entered in a draw for a prize as thanks for your willingness to participate in this research. The prize will be gift certificates for movies or music worth \$100. The prize will be given to the winner of the draw following the completion of data collection from all participants. Should you prefer not to be contacted should your name be chosen, please indicate your preference below.

Declaration of Consent:

I have read the contents of this consent form, and I agree to participate in this research study. I have had the opportunity to ask questions and all my questions have been answered to my satisfaction. I have been given sufficient time to consider the above information and to seek advice if I choose to do so. I will be given a signed copy of this consent form. By signing this consent form, I have not given up any of my legal rights.

I understand that I am free to withdraw my consent and discontinue my participation in this research at anytime, without any negative consequences. I also understand that I can refuse to do any specific part of the procedures or refuse to answer any specific questions without withdrawing from the study and without any negative consequences.

If sensitive issues, or a need for help, have been brought to my attention through my participation in this study, or should I have any questions about my rights as a research participant, I am encouraged to contact **the principle investigator, Michael Benibgui, at 514-582-XXXX, or by e-mail at mbenib@hotmail.com**. For questions regarding my rights as a participant I may also contact Concordia University's Office of Research Services, at 514-848-4887. Ms. Andrea Rodney will serve as my liaison for this project.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

YOUR NAME (please print) _____
SIGNATURE _____ DATE _____

INVESTIGATOR (please print) _____ SIGNATURE _____
DATE _____

WITNESS (please print)

SIGNATURE _____

DATE _____

YOUR E-MAIL: _____.

PLEASE ONLY INDICATE YOUR PHONE NUMBER BELOW IF YOU ARE COMFORTABLE BEING CALLED AT HOME OR ON YOUR CELL PHONE.

PHONE NUMBER _____ (CELL PHONE OR HOME NUMBER?)

I would like to be contacted regarding health issues in my questionnaires responses:
CIRCLE ONE: YES / NO

I would like to be contacted by e-mail should I win the gift-certificate prize:
CIRCLE ONE: YES / NO

CONSENT FORM TO PARTICIPATE IN RESEARCH

For Patients of McGill University Sexual Identity Clinic

Concordia Stress and Well-Being Project

Michael Benibgui, M.A. - Concordia University

Richard Montoro, M.D. - McGill University Health Centre

Note: Before deciding to participate in the study, you should clearly understand its requirements, risks and benefits. This document provides information about the study, and it may contain words you do not fully understand. Please read it carefully and ask the study staff any questions you may have. They will discuss the study with you in detail. You may take this form with you and discuss the study with anyone else before making your decision. If you decide to participate, you will be asked to sign this form and a copy will be given to you.

Consent: I agree to participate in a program of research being conducted by Michael Benibgui, M.A. and Dr. Paul D. Hastings, Ph. D., of the Department of Psychology at Concordia University, and Dr. Richard Montoro of the McGill University Health Centre. The purpose of the research is to examine the various conditions that play a role in the mental health of gay, lesbian and bisexual adolescents and young adults. To assist with this project, I will complete seven questionnaires. The questionnaires should take between 90 and 120 minutes to complete. I will also provide six saliva samples in one day, at two hour intervals, in plastic vials that will be provided to me.

My name will be entered in a draw for a prize as thanks for my willingness to participate in this research. The prize will be gift certificates for movies or music worth \$100. The prize will be given to the winner of the draw following the completion of data collection from all participants.

In all respects, my participation in this research will be confidential. That means that the researcher will not reveal my identity in any written or oral reports about this study. I will be assigned a coded number, and that number will be used on all materials collected in this study. My name will not appear on any of these materials. All of the questionnaire data and biological samples collected in this study will be stored in secure facilities at Concordia University. Statistical analyses will be based on the entire group of the participants, such that the information provided by individuals will not be identifiable in any reports. . The results from this study may be published, and other physicians, and psychologists participating in this research study may have access to your records related to this research study; however, your identity will not be revealed in the combined results.

I understand that I am free to withdraw my consent and discontinue my participation in this research at anytime, without any negative consequences. I also understand that I can refuse to do any specific part of the procedures or refuse to answer any specific questions without withdrawing from the study and without any negative consequences.

If I have any questions about my rights as a research participant, I am free to contact Concordia University's Office of Research Services, at 514-848-4887. Ms. Andrea Rodney will serve as my liaison for this project.

If sensitive issues, or a need for help, have been brought to my attention through my participation in this study, or should I have any other questions regarding my participation in this study, or require any confidential assistance before, during and after my participation I am encouraged to contact Michael Benibgui at 514-582-XXXX, or by email: mbenib@hotmail.com or contact Dr. Richard Montoro of the McGill University Health Centre at 514-934-1934 EXT 42371

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

MY NAME (please print) _____

SIGNATURE _____ DATE _____

WITNESSED BY _____ DATE _____



The Concordia University Stress and Well-Being Project

The Concordia University Stress and Well-Being Project is looking for volunteers to participate in a queer-positive research study that is examining the various conditions that play a role in the well-being of gay, lesbian and bisexual adolescents and young adults, especially with regards to the negative effects of homophobia in people's lives and stress levels, and the positive effects of social support.

The project is being conducted by a team of gay and lesbian researchers in the Psychology Department of Concordia University.

The study consists of a series of questionnaires that should take only about 45 minutes to complete. Participants will also be asked to provide a few saliva samples on their own time (by spitting into a plastic vial, or chewing on cotton swab for 30 seconds) in order to measure levels of a stress-hormone called *cortisol*. Questionnaires and saliva samples are completed on the participant's own time.

*** Participants will be entered into a draw for a 100\$ prize in gift certificates for CDs.**

This study is strictly confidential. Participants can choose to go on a first name basis. All personal information is kept in a locked facility at Concordia University, and will be destroyed following completion of the study. Participants will not be identified in any of the results of the study.

If you would be interested in being contacted with more details, please provide us with your information below or contact us at the following coordinates. Thank you in advance for your contribution to LBGTQ-positive research!

Michael Benibgui, M.A. mbenib@hotmail.com - 514-582-XXXX

Your Name (or first name only): _____

e-mail _____

Phone number _____

May we leave a discreet message on your voicemail? YES / NO

May we leave a message with parents / roommates? YES / NO

Directions for collection of 6 saliva samples:

Choose a regular weekday to collect the samples, mark down stressful events on the next page.

FILL OUT THE ENTIRE FORM BELOW WHEN YOU WAKE UP, AND REFER TO IT THROUGHOUT THE DAY.

Note: Please do not chew gum or eat candy/chocolate during that day, and collect samples BEFORE your meals or at least one hour after a meal.

To collect your saliva sample,

If possible wash your mouth out with water 5 minutes before collecting your sample.

- (1) Hold the Salivette vial and remove the stopper.
- (2) Remove the swab from the vial.
- (3) Put the swab in your mouth and chew it or let it rest under your tongue for 30 seconds or longer until fully wet.
- (4) Return the wet swab to the vial and close the cap firmly.
- (5) Fill in the date and exact time and location on the vial label.
- (6) Fill out the sampling questions sheet in the Ziploc bag.
- (7) Repeat at every hour indicated on this form (preferably before meals, or an hour after a meal), using a separate vial each time.

*(8) When you have finished collecting your samples, make sure all 6 are back in the Ziploc bag along with the two folded answer sheets and place them in your freezer. **Immediately call Michael Benibgui at 514-582-XXXX. He will pick them up from you at a location of your choice.***

MARK DOWN THE TIMES YOU HAVE CHOSEN IN THE BLANK SPACES PROVIDED

Saliva Sample #1: Upon Waking (before brushing teeth): At _____ AM

Saliva Sample #2: Approximately 2 hours later : At _____ AM/PM

Saliva Sample #3: Approximately 2 hours later: At _____ AM/PM

Saliva Sample #4: Approximately 2 hours later: At _____ PM

Saliva Sample #5: Approximately 2 hours later: At _____ PM

Saliva Sample #6: 4 hours later (at least 1 before or after supper): At _____ AM/PM

Mark down any problems you may have had with saliva collection throughout the day below: _____

RESOURCES / RESSOURCES

Please keep this sheet. - Veuillez garder cette feuille.

All the services below are confidential and free - Tous ces services sont gratuits et confidentiels.

- Kids Help Phone** 1.800.668.6868
24-hour help line for people under 20 years old
<http://kidshelp.sympatico.ca/en/>
- Tel-jeunes** 514.288.2266
24-heures Ligne téléphonique bilingue pour adolescents.
<http://www.teljeunes.com/>
- Drugs: help and referrals Drogues: aide et references.** 514.527.2626
24-hour help line for alcohol and substance abuse issues
Ligne d'aide téléphonique pour problèmes liés aux drogues.
<http://www.info-reference.qc.ca/drugs.html>
- Suicide Action Montreal** 514.723.4000
24-hour suicide hotline / ligne téléphonique.
- McGill University Sexual Identity Center** 514-934-1934
LGBT-friendly and LGBT Staffed Psychotherapy Clinic an Montreal General Hospital
- Project 10** 514.989.4585 EXT 42371
12 - 6pm Monday – Thursday / 12 - 5pm Friday. Help line and services for gays, lesbians, bisexuals and questioning youth, aged 14 – 25 years old
<http://www.algi.qc.ca/asso/p10/>
- Gay Line** 514.866.5090
7pm-11pm, help line for lesbians, bisexuals and gays
<http://www.gayline.qc.ca/>
- Gai Ecoute** 1.888.505.1010
Service d'aide et de référence à l'intention des personnes intéressés par les questions relatives à l'orientation sexuelle.
<http://www.gai-ecoute.qc.ca>
- Jeunesse Lambda** 514.528.7535
Groupe de discussion et d'activités pour jeunes gais, lesbiennes, bisexuel(le)s en questionnement de 25 ans et moins.
<http://www.algi.qc.ca/asso/jlambda/>

****You can also contact the investigator of the survey if you have any questions.
The voice-mailbox is private and confidential.****

Michael Benibgui 514.XXX-XXXX